ROXBURY TOWNSHIP BOARD OF EDUCATION
EISENHOWER MIDDLE SCHOOL
ENERGY ASSESSMENT

for

NEW JERSEY
BOARD OF PUBLIC UTILITIES

CHA PROJECT NO. 24454

October 2012

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REPORT DISCLAIMER

This audit was conducted in accordance with the standards developed by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) for a Level II audit. Cost and savings calculations for a given measure were estimated to within ±20%, and are based on data obtained from the owner, data obtained during site observations, professional experience, historical data, and standard engineering practice. Cost data does not include soft costs such as engineering fees, legal fees, project management fees, financing, etc.

A thorough walkthrough of the school was performed, which included gathering nameplate information and operating parameters for all accessible equipment and lighting systems. Unless otherwise stated, model, efficiency, and capacity information included in this report were collected directly from equipment nameplates and /or from documentation provided by the owner during the site visit. Typical operation and scheduling information was obtained from interviewing school staff and spot measurements taken in the field.

1.0 EXECUTIVE SUMMARY

The Roxbury Board of Education recently engaged CHA to perform an energy audit in connection with the New Jersey Board of Public Utilities' Local Government Energy Audit Program. This report details the results of the energy audit conducted for:

Building Name	Address	Square Feet	Construction Date
Eisenhower Middle School	7 Eyland Avenue Succasunna, NJ	105,840	Original: 1969 Addition: 1993 Addition: 1996 Addition: 2003

The Energy Conservation Measures (ECMs) identified in this report will allow for a more efficient use of energy and if pursued have the opportunity to qualify for the New Jersey SmartStart Buildings Program. Potential annual savings of $9,200 for the recommended ECMs may be realized with a combined payback of 5.0 years. A summary of the costs, savings, and paybacks for the recommended ECMs follows:

Summary of Energy Conservation Measures							
Energy Conservation Measure		Approx. Costs ($)	Approx. Savings ($/year)	Payback (Years) w/o Incentive	Potential Incentive ($)*	Payback (Years) w/ Incentive	Recommended For Implementation
ECM-1	Install Condensiong Boilers	89,000	1,300	>20	5,300	>20	
ECM-2	Replace Electric DHW Heaters with Condensing Tankless DHW	19,000	3,000	6.3	1,100	6.0	X
ECM-3	Install Demand Control Ventilation in Auditorium	9,000	700	12.9	100	12.7	X
ECM-4	Install a Network Computer Power Management System	2,000	1,700	1.2	0	1.2	X
ECM-5	Replace Single Pane Windows With Double Pane	391,000	4,300	>20	0	>20	
ECM-6	Replace Existing Roof	2,283,000	4,300	>20	0	>20	
ECM-7	Lighting Replacement / Upgrades	11,000	3,800	2.9	2,900	2.1	X
ECM-8	Install Lighting Controls (Occupancy Sensors)	40,000	6,000	6.7	6,900	5.5	
ECM-9	Lighting Replacements with Lighting Controls (Occupancy Sensors)	51,000	9,700	5.3	9,900	4.2	
ECM-10	Install Low Flow Fixtures	73,000	700	>20	0	>20	

2.0 INTRODUCTION AND BACKGROUND

New Jersey's Clean Energy Program, funded by the New Jersey Board of Public Utilities, supports energy efficiency and sustainability for Municipal and Local Government Energy Audits. Through the support of a utility trust fund, New Jersey is able to assist state and local authorities in reducing energy consumption while increasing comfort.

The Eisenhower Middle School is a seventh and eighth grade school located in Succasunna, NJ. It is a 105,840 square foot, single story structure with exterior block facing. The building was constructed with single pane aluminum framed windows and a flat, rubber membrane type roof. The building was constructed in 1969. Occupancy includes approximately 650 students and 65 employees, totaling 715 people. The building is assumed fully occupied from 8:00 am to 3:30 pm during the weekdays, with some maintenance and cleaning personnel operating later.

3.0 EXISTING CONDITIONS

3.1 Building - General

Built in 1969 with several renovations since, the Eisenhower Middle School is a 105,840 square foot, single-story school with office space, classrooms, gymnasium and auditorium. The building can be assumed to be fully occupied until 4:00 pm during the week. Custodial staff is typically in the building after hours during the week. The hours of operation are:

- Monday through Friday 8:00 am to 4:00 pm
- Saturday & Sunday, open as needed

The building is constructed of block walls and brick veneer with an air space between. The interior walls are a mixture of painted block walls and framed walls filled with fiberglass insulation and finished with gypsum board. The building is typical square shaped with main hallways and classrooms on either side. There is a courtyard in the center of the building.

3.2 Utility Usage

Utilities include electricity, natural gas, and potable water. Electricity is delivered by Jersey Central Power & Light and supplied by Direct Energy. Electricity supply bills were not obtained and therefore the electricity rate is skewed. Natural gas supplied by Hess and delivered by New Jersey Natural Gas. Water is paid for through New Jersey American Water.

The building has one electric meter serving the site. From June 2011 through May 2012, the electric usage for the school was as follows:

Actual Cost & Site Usage by Utility

Electric		
Annual Usage	1,444,174	kWh/yr.
Annual Cost	179,021	$
Blended Rate	0.124	$/kWh
Supply Rate	N/A	$/kWh
Demand Rate	N/A	$/kW
Peak Demand	399	kW
Min. Demand	324	kW
Avg. Demand	363	kW
Natural Gas		
Annual Usage	19,171	therms/yr.
Annual Cost	23,532	$
Rate	1.23	$/Therm

Electrical usage was generally higher in the summer months when air conditioning equipment was operational. Natural gas consumption was highest in winter months for heating. See Appendix A for a detailed utility analysis.

Under New Jersey's energy deregulation law, the supply portion of the electric (or natural gas) bill is separated from the delivery portion. With the supply portion open to competition, customers can shop around for the best price on their energy supplies. Their electric and natural gas distribution utilities will still deliver those supplies through their wires and pipes – and respond to emergencies, should they arise – regardless of where those supplies are purchased. Purchasing your energy supplies from a company other than your electric or gas utility is purely an economic decision; it has no impact on the reliability or safety of your service. Additional information on selecting a third party energy supplier is available here: http://www.state.nj.us/bpu/commercial/shopping.html. See Appendix A for a list of third-party energy suppliers licensed by the Board of Public Utilities to sell within the building's service area.

3.3 HVAC Systems

The systems and equipment described below serve the school building. Specifics on the mechanical equipment can be found within the equipment inventory located in Appendix B.

Typically each classroom is served by a unit ventilator, which consists of heating/cooling coils, a circulation fan, outdoor air and return air dampers and temperature controls. During our audit we found that the unit ventilators are turned off due to comfort and/ or noise issues. When the units are "off", the dampers are closed and no outdoor air is being introduced through the unit, therefore the heating load on the unit is much diminished. Replacing the existing unit ventilators with new units would require that the outside air quantity be provided to each classroom to meet the present code requirements which would result in an increase in energy use verses the current units. Although modern controls can help reduce the amount of energy used, ultimately the new unit ventilators will consume more energy than the present units.

3.3.1 Heating Systems

The original 1969 boilers were replaced in 1993 with eight (8) 160 MBH Glowcore hot water boilers having rated efficiencies of 88%. These boilers are located exterior to the building in a prefabricated l boiler room. Two (2) 378 MBH Buderus G334 boilers were installed in 2012 in the main boiler room within the school. These units have a rated efficiency of 83%. The boilers provide heating hot water to the school's Lennox rooftop units. There are also several unit ventilators that provide electric heat to the school.

Heating hot water is distributed throughout the building with four 5 HP Emerson 87.5% efficient pumps. The pumps operate in lead/lag fashion.

3.3.2 Package Direct Expansion (DX) Cooling

Cooling is provided by direct expansion (DX) units on f the roof that were installed in 1993. Cooling is provided in the auditorium, gymnasium, administration offices and some classrooms. On-site observations concluded that approximately 30% of the school has supplied cooling. There is a total of 70 tons of cooling within the school.

The restrooms, classrooms and corridors are ventilated using roof mounted exhaust fans.

3.4 Lighting/Electrical Systems

Since building construction in 1969, the school has re-ballasted and re-lamped some of their fixtures. A mixture of T12 and T8 lamps, compact fluorescent twin biaxial lamps, and compact fluorescent spiral lamps are utilized. Older style incandescent lamps are also used in select areas. The gymnasium uses 400 W metal halide lighting. The primary control method for the lights is wall switches which are manually turned on at 6:30 am and off at 4:00 pm.

3.5 Plumbing Systems

3.6.1 Domestic Hot Water System

Domestic hot water is provided by four separate tank-type electric domestic hot water heaters located in different parts of the building. The main unit is a 36 kW 116 gallon Rudd Electric water heater. There are two Bradford White electric water heaters totaling 80 gal and one 40 gal A.O. Smith unit. These units serve the toilet rooms, showers and kitchen.

3.6.2 Plumbing Fixtures

The building's lavatories, water closets, and urinals have been replaced with low-flow plumbing fixtures. In general, lavatories are 2.5 GPM with push type metering faucets, water closets are 1.6 gallons per flush (GPF), and urinals are 1.0 GPF.

4.0 ENERGY CONSERVATION MEASURES

4.1 ECM-1 Install Condensing Boilers

The building is heated with hot water supplied by eight (8) Glowcore 160 MBH and two (2) Buderus 378 MBH hot water boilers. Both sets of boilers are non-condensing, and supplied with natural gas. The Glowcore boilers have an efficiency of 88% and the Buderus boilers have an efficiency of 83%.

The existing boilers are non-condensing type and therefore have maximum thermal efficiencies in the 83-88% range. New condensing gas boilers are available that operate at minimally operate at 92%, but can operate as high as 96%. This ECM assesses the replacement of the standard boilers with equally sized condensing gas boilers. .

To implement this ECM, the old boilers would be removed and the new boilers and primary pumps put in their place. Piping and wiring modifications would be needed. Dedicated boiler venting would also need to be installed either through the roof or sidewall.

It was assumed that all of the facilities natural gas is used for heating as both the kitchen equipment and domestic hot water systems are electric. The boiler fuel consumption was calculated from the natural gas used annually for the entire year per utility bills and boiler efficiency. The existing boiler efficiency was then compared to the efficiency of new condensing boilers . The difference in fuel usage was the savings.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-1 HVAC Condensing Boilers Addition

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
89,000	0	0	1,000	1,300	0	1,300	(0.6)	5,300	>20	>20

* Incentive shown is per the New Jersey Smart Start Program. See section 5.0 for other incentive opportunities.

Expected Life: 25 years

Lifetime Savings: 0 kWh 25,000 therms $ 32,500

This measure is not recommended.

4.2 ECM-2 Replace Electric Water Heaters with Natural Gas Fired Water Heaters

The school utilizes four water heaters to produce domestic hot water. The main DHW heater is a 36 kW Rudd Electric heater. The capacity is 116 gallons. The secondary DHW heater is a Bradford White 6 kW unit with 50 gallon capacity. A third 4.5 kW unit was manufactured by A.O. Smith and has 40 gallon capacity. Finally, another Bradford White heater is also 4.5 kW and has a capacity of 30 gallons. These water heaters use a substantial amount of electricity to heat water that is not used. Based on actual usage

of the areas served these units could be replaced with instantaneous tankless units. Converting to lower cost natural gas will result in fuel savings. This ECM assesses replacing the electric powered DHW heaters that serve school with high efficiency condensing gas water heaters. To implement this ECM, piping and electrical wiring will need to be modified as well as new venting installed. The electrical power currently supplied to these units could be used to power other equipment.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-2 Replace Electric Domestic Hot Water Heaters with Natural Gas

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
$	kW	kWh	Therms	KGals	$	$	$		$	Years	Years
20,000	50	34,700	(1,100)	0	3,000	0	3,000	2.0	1,100	6.7	6.3

* Incentive shown is per the New Jersey SmartStart Program. See section 5.0 for other incentive opportunities.

Expected Life: 20 years

Lifetime Savings: 694,000 kWh -22,000 therms $ 60,000

This measure is recommended.

4.3 ECM-3 Install Demand Control Ventilation in the Auditorium

Packaged rooftop units that serve the auditorium (RTU-2 and RTU-3) are assumed to provide the full occupancy design ventilation outside air flow even during times of low or no occupancy. By reducing the amount of outside air during low occupancy periods will reduce heating and cooling energy. Installing carbon dioxide sensors (CO2) will allow the quantity of ventilation air to be based on maintaining an acceptable carbon dioxide (CO_2) level in the space as an indicator of indoor air quality. A limit of 1000 PPM of CO_2 is recommended in ASHRAE Standard 62-2010, Ventilation for Acceptable Indoor Air Quality. Sensors could be installed to measure the building air CO_2 concentration, and the control sequence of operation programmed into the BAS to control the position of the outdoor air dampers. During unoccupied periods, the outside air dampers should be closed.

For the analysis, estimated savings for demand control ventilation are based on reducing the total average volume of outside air by 50% based on observed space usage. The energy savings are the differences in utility usage

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-3 HVAC Demand Control Ventilation

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
9,000	1,300	0	500	700	0	700	0.2	100	12.9	12.7

* Incentive shown is per the New Jersey Smart Start Program. See section 5.0 for other incentive opportunities.

Expected Life: 15 years

Lifetime Savings: 19,500 kWh 7,500 therms $ 10,500

This measure is not recommended.

4.4 ECM-4 Network Controller Software

Personal computers can consume large amounts of electricity unnecessarily if left on for long periods of time when not in use, even in sleep mode. This measure assessed implementation of proprietary network manager software that monitors the usage and shuts off all computers and monitors that are inactive. This software does not effect on daily network operation and does not compromise security firewalls.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-4 Network Controller Software

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive*	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
2,000	14,000	0	0	1,700	0	1,700	4.7	0	1.2	1.2

* There are currently no incentives available for this measure

Expected Life: 5 years

Lifetime Savings: 70,000 kWh 0 therms $8,500

This measure is recommended.

4.5 ECM-5 Replace Single Pane Windows with Thermal Efficient Windows

The school has 3,906 square feet of window area. These windows are constructed with aluminum frames and single pane glazing. Due to age, construction type, and condition, the windows incur excess air infiltration and provide average thermal resistance to heat transfer. An assessment considered installing 4 ¼" dual glazed windows to decrease energy losses.

The calculation uses bin hours to estimate the occupied and unoccupied bin hours. This is converted to existing energy for the occupied and unoccupied cases using the existing window U-factor and the

heating and cooling temperature. The two are summed together to create the annual utility usage for the baseline. The same steps are done to calculate the proposed utility usage. The difference in heating losses through the windows resulted in annual heating and cooling savings.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized as follows:

ECM-5 Window Replacements and Reduced Glazing

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
$	kW	kWh	Therms	KGals	$	$	$		$	Years	Years
391,000	0	2,700	3,300	0	4,300	0	4,300	(0.7)	0	>20	>20

* Does not qualify for an Incentive per the New Jersey SmartStart Program. See section 5.0 for other incentive opportunities.

Expected Life: 30 years

Lifetime Savings: 81,000 kWh 99,000 therms $129,000

This measure is not recommended.

4.6 ECM-6 Roof Replacement

The roof is constructed of metal roof decking, insulation, and a rubber mat system. The roof has surpassed its useful life and needs to be replaced. This ECM addresses replacing the roof to minimize heating and cooling energy losses.

To calculate the savings, the heat losses through the roof assembly of the school was found using the existing roof's R-value of 13.0 and bin weather data for nearby Newark, NJ. The values were totaled to determine the existing annual energy losses. Heating and cooling energy loss values were then determined with a thermal resistance which included the replacement roof R-value of 18.0. The annual energy savings of replacing the roof is detailed in the summary table below.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-6 Roof Replacement

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
$	kW	kWh	Therms	KGals	$	$	$		$	Years	Years
2,283,000	0	1,300	3,400	0	4,300	0	4,300	(0.4)	0	>20	>20

* There is no incentive available through the New Jersey Smart Start or Direct Install Programs for this ECM. See section 5.0 for other incentive opportunities.

Expected Life: 30 years

Lifetime Savings: 39,000 kWh 102,000 therms $129,000

This measure is not recommended.

4.7 ECM-7 Lighting Replacement

Modern fluorescent lamps convert electrical power into useful light more efficiently than an incandescent lamp or T-12 bulbs. A comprehensive fixture survey was conducted of the entire building. Each switch and circuit was identified, and the number of fixtures, locations, and existing wattage established (Appendix C). There is an opportunity to reduce consumption by upgrading the existing T-12 fixtures to T-8 or super T-8 fixtures. Supporting calculations, including assumptions for lighting hours and annual energy usage for each fixture, are provided in Appendix C.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM 7-Lighting Replacement

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
11,000	31,000	20	0	3,800	0	3,800	4.2	2,900	2.9	2.1

* Incentive shown is per the New Jersey Smart Start Program. See section 5.0 for other incentive opportunities.

Expected Life: 15 years

Lifetime Savings: 465,000 kWh 0 therms $ 57,000

This measure is recommended.

4.8 ECM-8 Install Occupancy Sensors

The current lighting is controlled by manual switches. Lights are generally turned on in the morning and shut off at night. During occupied times, there are rooms that are not occupied; however, the lights remain on. Adding occupancy controls to the individual rooms will automatically control the lights based on occupancy. The occupancy sensor can be wall mounted near the switch or placed at the ceiling for larger room coverage. All occupancy sensors are equipped with a manual override feature. These sensors are generally not recommended in public toilet rooms.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-8 Install Lighting Controls (Occupancy Sensors)

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
40,000	48,600	0	0	6,000	0	6,000	1.3	6,900	6.7	5.5

* Incentive shown is per the New Jersey Smart Start Program. See section 5.0 for other incentive opportunities.

Expected Life: 15 years

Lifetime 729,000 kWh 0 therms $

Savings: _____ _____ 90,000

This measure is not recommended in lieu of ECM-7.

4.9 ECM-9 Lighting Replacements with Occupancy Sensors

Due to interactive effects, the energy and cost savings for occupancy sensors and lighting upgrades are not cumulative. This measure is a combination of ECM-7 and ECM-8 to reflect actual expected energy and demand reduction.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized as follows:

ECM-9 Lighting Replacements with Lighting Controls (Occupancy Sensors)

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
51,000	78,500	0	0	9,700	0	9,700	1.9	9,900	5.3	4.2

* Incentive shown is per the New Jersey Smart Start Program. See section 5.0 for other incentive opportunities.

Expected Life: 15 years

Lifetime Savings: 1,177,500 kWh 0 therms $ 145,500

This measure is not recommended in lieu of ECM-7.

4.10 ECM-10 Install Low Flow Fixtures

The existing toilet room fixtures consume more water than modern plumbing fixtures. It was determined that the current toilets and urinals with an average water use of 1.6 gal/flush for toilets and 1.6 gal/flush for urinals and 2.2 gallons per minute for faucets. Based on the number of occupants, it was estimated that each toilet and faucet is utilized approximately three times per day.The water savings associated from replacing these fixtures with low-flow fixtures was calculated by taking the difference of the annual water usage for the proposed and base case. The basis of this calculation is the number of times each fixture is used, gallons per use, and number of fixtures. Replacing the existing fixtures in the restrooms with 1.28 gals/flush toilets and 0.5 gal/flush urinals and 0.5 gallon per minute faucets.

ECM-10 **Install Low Flow Fixtures**

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
73,000	0	0	0	700	0	700	(0.9)	0	>20	>20

Expected Life: 15 years

Lifetime Savings: 0 kWh 0 therms $ 10,500

This measure is not recommended.

5.0 PROJECT INCENTIVES

5.1 Incentives Overview

5.1.1 New Jersey Pay For Performance Program

The school will be eligible for incentives from the New Jersey Office of Clean Energy. The most significant incentives are available from the New Jersey Pay for Performance (P4P) Program. The P4P program is designed for qualified energy conservation projects applied to facilities whose demand in any of the preceding 12 months exceeds 100 kW. This average minimum has been waived for buildings owned by local governments or municipalities and non-profit organizations, however. Facilities that meet this criterion must also achieve a minimum performance target of 15% energy reduction by using the EPA Portfolio Manager benchmarking tool before and after implementation of the measure(s). If the participant is a municipal electric company customer, and a customer of a regulated gas New Jersey Utility, only gas measures will be eligible under the Program. Available incentives are as follows:

Incentive #1: Energy Reduction Plan – This incentive is designed to offset the cost of services associated with the development of the Energy Reduction Plan (ERP).

- Incentive Amount: $0.10/SF
- Minimum incentive: $5,000
- Maximum Incentive: $50,000 or 50% of School annual energy cost

The standard incentive pays $0.10 per square foot, up to a maximum of $50,000, not to exceed 50% of school annual energy cost, paid after approval of application. For building audits funded by the New Jersey Board of Public Utilities, which receive an initial 75% incentive toward performance of the energy audit, facilities are only eligible for an additional $0.05 per square foot, up to a maximum of $25,000, rather than the standard incentive noted above.

Incentive #2: Installation of Recommended Measures – This incentive is based on projected energy savings as determined in Incentive #1 (Minimum 15% savings must be achieved), and is paid upon successful installation of recommended measures.

Electric

- Base incentive based on 15% savings: $0.09/ per projected kWh saved.
- For each % over 15% add: $0.005 per projected kWh saved.
- Maximum incentive: $0.11/ kWh per projected kWh saved

Gas

- Base incentive based on 15% savings: $0.90/ per projected Therm saved.
- For each % over 15% add: $0.05 per projected Therm saved.
- Maximum incentive: $1.25 per projected Therm saved

Incentive cap: 25% of total project cost

Incentive #3: Post-Construction Benchmarking Report – This incentive is paid after acceptance of a report proving energy savings over one year utilizing the Environmental Protection Agency (EPA) Portfolio Manager benchmarking tool.

Electric

- Base incentive based on 15% savings: $0.09/ per projected kWh saved.
- For each % over 15% add: $0.005 per projected kWh saved.

- Maximum incentive: $0.11/ kWh per projected kWh saved

Gas

- Base incentive based on 15% savings: $0.90/ per projected Therm saved.
- For each % over 15% add: $0.05 per projected Therm saved.
- Maximum incentive: $1.25 per projected Therm saved

Incentives #2 and #3 can be combined to yield additive savings.

	Incentives $		
	Elec	Gas	Total
Incentive #1	$0	$0	$10,584
Incentive #2	$0	$0	$0
Incentive #3	$0	$0	$0
Total All Incentives	**$0**	**$0**	**$10,584**

The current ECM's does not meet the minimum savings of 15% and therefore the building will not be eligible for incentives #2 and #3. See Appendix D for additional details.

5.1.2 New Jersey Smart Start Program

For this program, specific incentives for energy conservation measures are calculated on an individual basis utilizing the 2011 New Jersey Smart Start incentive program. This program provides incentives dependent upon mechanical and electrical equipment. If applicable, incentives from this program are reflected in the ECM summaries and attached appendices.

If the complex qualifies and enters into the New Jersey Pay for Performance Program, all energy savings will be included in the total site energy reduction, and savings will be applied towards the Pay for Performance incentive. A project is not applicable for both New Jersey incentive programs.

5.1.3 Direct Install Program

The Direct Install Program targets small and medium sized facilities where the peak electrical demand does not exceed 150 kW in any of the previous 12 months. Buildings must be located in New Jersey and served by one of the state's public, regulated electric or natural gas utility companies.

Direct Install is funded through New Jersey's Clean Energy Program and is designed to provide capital for building energy upgrade projects to fast track implementation. The program will pay up to 70% of the costs for lighting, HVAC, motors, natural gas, refrigeration, and other equipment upgrades with higher efficiency alternatives. If a building is eligible for this funding, the Direct Install Program can significantly reduce the implementation cost of energy conservation projects.

The program pays 70% of each project cost up to $75,000 per electrical utility account; total funding for each year is capped at $250,000 per customer. Installations must be completed by a Direct Install participating contractor, a list of which can be found on the New Jersey Clean Energy Website at http://www.njcleanenergy.com. Contractors will coordinate with the applicant to arrange installation of recommended measures identified in a previous energy assessment, such as this document.

Due to the peak demand observed from the utility bills of 381 kW in April of 2012, this building is not eligible for the direct install program.

5.1.4 Energy Savings Improvement Plans (ESIP)

The Energy Savings Improvement Program (ESIP) allows government agencies to make energy related improvements to their facilities and pay for the costs using the value of energy savings that result from the improvements. Under the recently enacted Chapter 4 of the Laws of 2009 (the law), the ESIP provides all government agencies in New Jersey with a flexible tool to improve and reduce energy usage with minimal expenditure of new financial resources.

ESIP allows local units to use "energy savings obligations" to pay for the capital costs of energy improvements to their facilities. This can be done over a maximum term of 15 years. Energy savings obligations are not considered "new general obligation debt" of a local unit and do not count against debt limits or require voter approval. They may be issued as refunding bonds or leases. Savings generated from the installation of energy conservation measures pay the principal of and interest on the bonds; for that reason, the debt service created by the ESOs is not paid from the debt service fund, but is paid from the general fund.

For local governments interested in pursuing an ESIP, the first step is to perform an energy audit. Pursuing a Local Government Energy Audit through New Jersey's Clean Energy Program is a valuable first step to the ESIP approach. The "Local Finance Notice" outlines how local governments can develop and implement an ESIP for their facilities (see Appendix E). The ESIP can be prepared internally if the entity has qualified staff. If not, the ESIP must be implemented by an independent contractor and not by the energy savings company producing the Energy Reduction Plan.

The ESIP approach may not be appropriate for all energy conservation and energy efficiency improvements. Local units should carefully consider all alternatives to develop an approach that best meets their needs.

6.0 ALTERNATIVE ENERGY SCREENING EVALUATION

6.1 Solar

6.1.1 Photovoltaic Rooftop Solar Power Generation

The school was evaluated for the potential to install rooftop photovoltaic (PV) solar panels for power generation. Present technology incorporates the use of solar cell arrays that produce direct current (DC) electricity. This DC current is converted to alternating current (AC) with the use of an electrical device known as an inverter. The building's roof has sufficient room to install a large solar cell array. All rooftop areas have been replaced, and are in good condition. It is recommended to install a permanent PV array at this time.

The PVWATTS solar power generation model was utilized to calculate PV power generation. The closest city available in the model is Newark, New Jersey and a fixed tilt array type was utilized to calculate energy production. The PVWATT solar power generation model is provided in Appendix F.

Federal tax credits are also available for renewable energy projects up to 30% of installation cost. Since the school is a non-profit organization, federal taxes are paid and this project is eligible for this incentive.

Installation of (PV) arrays in the state New Jersey will allow the owner to participate in the New Jersey solar renewable energy certificates program (SREC). This is a program that has been set up to allow entities with large amounts of environmentally unfriendly emissions to purchase credits from zero emission (PV) solar-producers. One SREC credit is equivalent to 1000 kilowatt hours of PV electrical production; these credits can be traded for period of 15 years from the date of installation. The average SREC value per credit is estimated to be about $65/ SREC per year based on current market data, and this number was utilized in the cash flow for this report.

The system costs for PV installations were derived from contractor budgetary pricing in the state of New Jersey for estimates of total cost of system installation. It should be noted that the cost of installation is currently about $4.00 per watt or $4,000 per kW of installed system. Other cost considerations will also need to be considered. PV panels have an approximate 20 year life span; however, the inverter device that converts DC electricity to AC has a life span of 10 to 12 years and will need to be replaced multiple times during the useful life of the PV system.

The implementation cost and savings related to this ECM are presented in Appendix F and summarized as follows:

Photovoltaic (PV) Solar Power Generation - Screening Assessment

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Federal Tax Credit	New Jersey Renewable ** SREC	Payback (without incentive)	Payback (with incentive)
$	kW	kWh	therms	$	$	$	$	$	Years	Years
$720,000	**180**	**224,800**	**0**	**$27,900**	**0**	**$27,900**	**$0**	**$14,600**	**25.8**	**16.9**

* No federal tax credit currently available.
** Solar Renewable Energy Certificate Program (SREC) for 2012 is $65/1000kwh

This measure is not recommended due to the long payback time. It is suggested, however, that the market for SREC credits is closely monitored. This market is fluctuating, and if the value per SREC is increased the measure could potentially show for a shorter payback in the near future.

6.1.2 Solar Thermal Hot Water Plant

Active solar thermal systems use solar collectors to gather the sun's energy to heat water, another fluid, or air. An absorber in the collector converts the sun's energy into heat. The heat is then transferred by circulating water, antifreeze, or sometimes air to another location for immediate use or storage for later utilization. Applications for active solar thermal energy include providing hot water, heating swimming pools, space heating, and preheating air in residential and commercial buildings.

A standard solar hot water system is typically composed of solar collectors, heat storage vessel, piping, circulators, and controls. Systems are typically integrated to work alongside a conventional heating system that provides heat when solar resources are not sufficient. The solar collectors are usually placed on the roof of the building, oriented south, and tilted around the site's latitude, to maximize the amount of radiation collected on a yearly basis.

Several options exist for using active solar thermal systems for space heating. The most common method involves using glazed collectors to heat a liquid held in a storage tank (similar to an active solar hot water

system). The most practical system would transfer the heat from the panels to thermal storage tanks and transfer solar produced thermal energy to use for domestic hot water production. DHW is presently produced by gas-fired water heaters and, therefore, this measure would offer natural gas utility savings.

7.0 EPA PORTFOLIO MANAGER

The EPA Portfolio Manager benchmarking tool was used to assess the building's energy performance. Portfolio Manager provides a Site and Source Energy Use Intensity (EUI), as well as an Energy Star performance rating for qualifying building types. The EUIs are provided in kBtu/ft^2/year, and the performance rating represents how energy efficient a building is on a scale of 1 to 100, with 100 being the most efficient. In order for a building to receive and Energy Star label, the energy benchmark rating must be at least 75. As energy use decreases from implementation of the proposed ECMs, the Energy Star rating will increase.

The Site EUI is the amount of heat and electricity consumed by a building as reflected in utility bills. Site energy may be delivered to a school in the form of primary energy, which is raw fuel burned to create heat or electricity (such as natural gas or oil), or as secondary energy, which is the product created from a raw fuel (such as electricity or district steam). Site EUI is a measure of a building's annual energy utilization per square foot. Site EUI is a good measure of a building's energy use and is utilized regularly for comparison of energy performance for similar building types.

$$\textbf{\textit{Site Energy Intensity}} = \frac{(\textit{Electric Usage in kBtu + Natural Gas in kBtu})}{\textit{Building Square Footage}}$$

To provide an equitable comparison for different buildings with varying proportions of primary and secondary energy consumption, the Portfolio Manager uses the convention of Source EUIs. The source energy also accounts for all losses incurred in production, storage, transmission, and delivery of energy to the site; which provides an equivalent measure for various types of buildings with different energy sources.

$$\textbf{\textit{Source Energy Intensity}} = \frac{(\textit{Electric Usage in kBtu X Site/Source Ratio + Natural Gas in kBtu X Site/Source Ratio})}{\textit{Building Square Footage}}$$

The EPA Score, Site EUI, and Source EUI for Eisenhower Middle School are as follows:

Energy Intensity	Eisenhower Middle School	National Average
EPA Score	28	50
Site (kBtu/sf/year)	65	63
Source (kBtu/sf/year)	174	115

To be eligible to receive a national Energy Star score, a building must meet all three of these requirements:

1. Building designation – More than 50 percent of the building's gross floor area must be one of the spaces eligible to receive an Energy Star score. The remainder of the building must abide by specific rules for each space type.
2. Operating characteristics – To ensure the building is consistent with the peer group used for comparison, each space in your building must meet certain minimum and maximum thresholds for key operating characteristics.
3. Energy data – At least 12 full consecutive calendar months for all active meters, accounting for all energy use (regardless of fuel type) in the building.

In addition, a Licensed Professional (meaning a Professional Engineer or Registered Architect) must verify that all energy use is accounted for accurately, that the building characteristics have been properly reported (including the square footage of the building), that the building is fully functional in accordance with industry standards, and that each of the indoor environment criteria has been met.

For the School to qualify for the Energy Star label the EPA score is required to be above 75. There are several energy conservation measures recommended in this report, that if implemented will further reduce the energy use intensity and increase the EPA score of the Middle School. This building is not eligible for Energy Star certification at this time.

The Portfolio Manager account can be accessed by entering the username and password shown below at the login screen of the Portfolio Manager website (https://www.energystar.gov/istar/pmpam/).

A full EPA Energy Star Portfolio Manager Report is located in Appendix G.

The user name ("*roxburyboe*") and password ("*energystar*") for the building's EPA Portfolio Manager Account has been provided to the Roxbury Township Board of Education.

8.0 CONCLUSIONS & RECOMMENDATIONS

The energy audit conducted by CHA at the Eisenhower Middle School identified potential ECMs for lighting and control replacement, HVAC replacement, DHW replacement, demand controlled ventilation. Potential annual savings of $9,200 may be realized for the recommended ECMs, with a summary of the costs, savings, and paybacks as follows:

ECM-2 Replace Electric DHW Heaters with Condensing Tankless DHW

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
19,000	34,700	50	-1,100	3,000	0	3,000	2.2	1,100	6.3	6.0

Expected Life: 20 years
Lifetime Savings: 694,000 kWh -22,000 therms $ 60,000

ECM-3 Install Demand Control Ventilation in Auditorium

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
9,000	1,300	0	500	700	0	700	0.2	100	12.9	12.7

Expected Life: 15 years
Lifetime Savings: 19,500 kWh 7,500 therms $ 10,500

ECM-4 Install a Network Computer Power Management System

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
2,000	14,000	0	0	1,700	0	1,700	4.7	0	1.2	1.2

Expected Life: 5 years
Lifetime Savings: 70,000 kWh 0 therms $ 8,500

ECM-7 Lighting Replacement / Upgrades

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
11,000	31,000	20	0	3,800	0	3,800	4.2	2,900	2.9	2.1

Expected Life: 15 years
Lifetime Savings: 465,000 kWh 0 therms $ 57,000

APPENDIX A

Utility Usage Analysis

Roxbury Township BOE
42 Hillside Ave.
Succasunna, NJ 07876

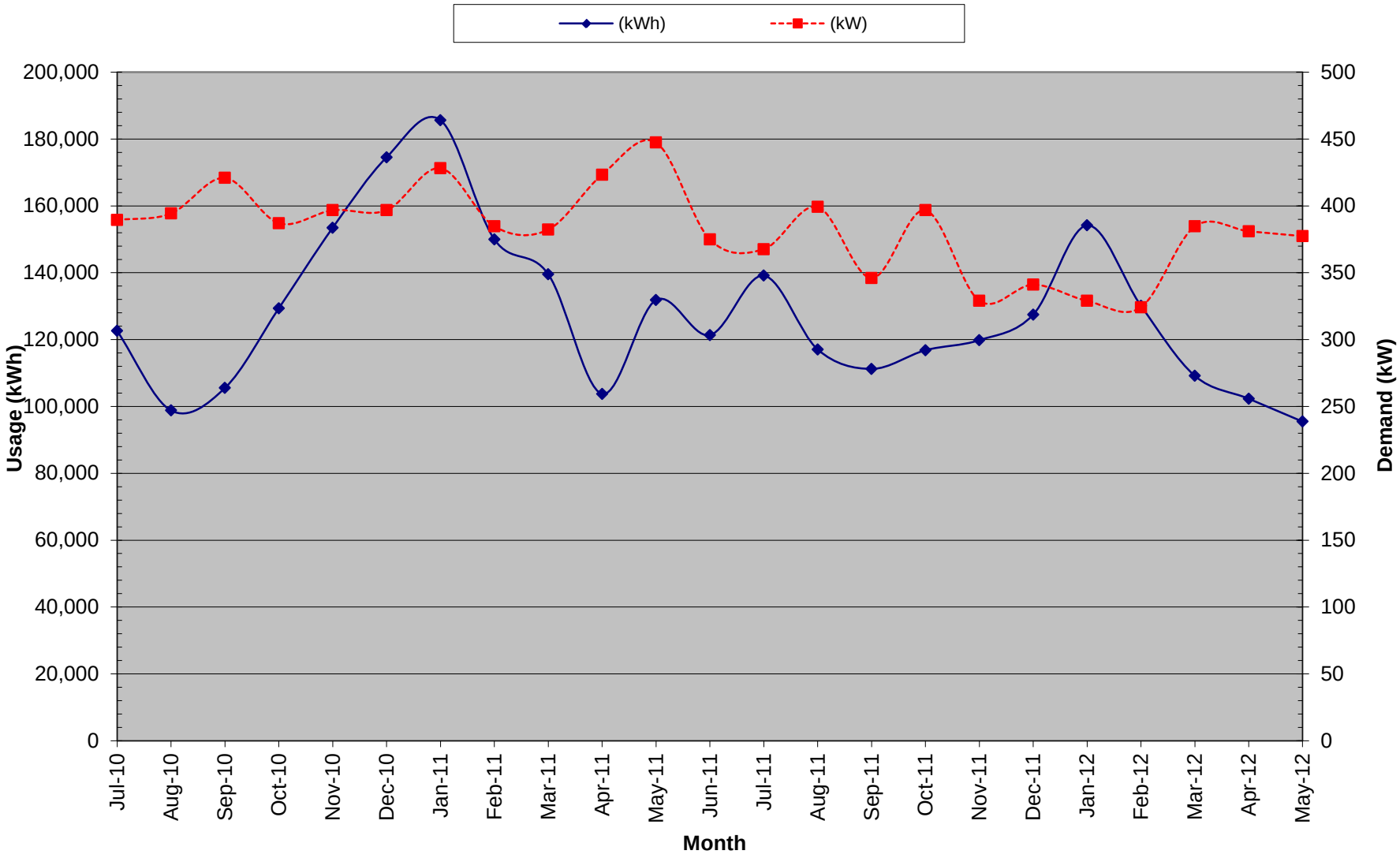
Electric Service
Delivery - JCP&L
Supplier -

For Service at: **Eisenhower Middle School**
Account No.: **100000-1566-36 (Shared between HS and MS)**
Meter No.: **21050205**

			Charges			Unit Costs		
Month	Consumption (kWh)	Demand (kW)	Total ($)	Delivery ($)	Supply ($)	Blended Rate ($/kWh)	Consumption ($/kWh)	Demand ($/kW)
July-10	122,592	389.48	$ 16,181.21			$ 0.132	$ 0.132	$ -
August-10	98,801	394.32	$ 13,623.16			$ 0.138	$ 0.138	$ -
September-10	105,523	420.95	$ 14,327.87			$ 0.136	$ 0.136	$ -
October-10	129,365	387.07	$ 16,700.76			$ 0.129	$ 0.129	$ -
November-10	153,461	396.76	$ 19,332.22			$ 0.126	$ 0.126	$ -
December-10	174,539	396.76	$ 21,630.95			$ 0.124	$ 0.124	$ -
January-11	185,647	428.20	$ 23,039.97			$ 0.124	$ 0.124	$ -
February-11	149,988	384.66	$ 18,243.05			$ 0.122	$ 0.122	$ -
March-11	139,573	382.23	$ 16,647.64			$ 0.119	$ 0.119	$ -
April-11	103,773	423.36	$ 13,311.53			$ 0.128	$ 0.128	$ -
May-11	131,842	447.44	$ 21,106.57			$ 0.160	$ 0.160	$ -
June-11	121,367	374.92	$ 14,553.94			$ 0.120	$ 0.120	$ -
July-11	139,142	367.64	$ 20,337.90			$ 0.146	$ 0.146	$ -
August-11	117,052	399.28	$ 14,897.72			$ 0.127	$ 0.127	$ -
September-11	111,241	345.94	$ 14,081.74			$ 0.127	$ 0.127	$ -
October-11	116,826	396.76	$ 14,352.38			$ 0.123	$ 0.123	$ -
November-11	119,830	329.00	$ 14,521.43			$ 0.121	$ 0.121	$ -
December-11	127,468	341.10	$ 15,359.83			$ 0.120	$ 0.120	$ -
January-12	154,181	329.00	$ 17,996.78			$ 0.117	$ 0.117	$ -
February-12	130,118	324.18	$ 15,234.42			$ 0.117	$ 0.117	$ -
March-12	109,162	384.66	$ 13,252.16			$ 0.121	$ 0.121	$ -
April-12	102,316	381.02	$ 12,561.65			$ 0.123	$ 0.123	$ -
May-12	95,470	377.38	$ 11,871.14			$ 0.124	$ 0.124	$ -
Total (12-months)	**1,444,174**	**399.28**	**$179,021.09**	**$0.00**	**$0.00**	**$ 0.124**	**$ 0.124**	**$ -**

(*All values estimated based on sq. ft. percentage between HS and MS)
(*Blue text indicates estimation due to no available bill)

Electric Usage - Eisenhower Middle School

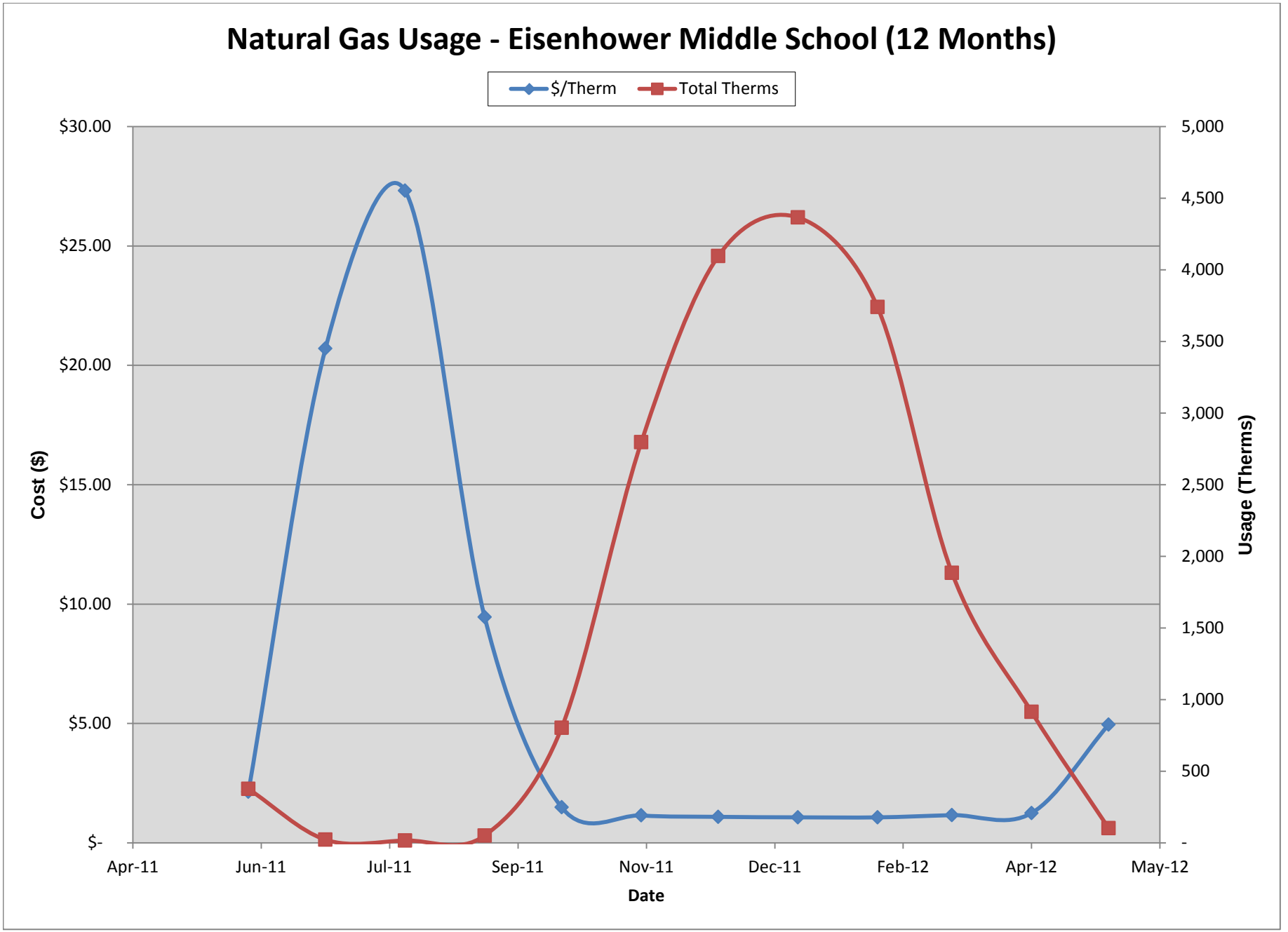


Roxbury Township BOE
42 Hillside Ave.
Succasunna, NJ 07876

Gas Service
Delivery - NJNG
Supplier -

For Service at: Eisenhower Middle School
Account No.: 03-1111-2300-14
Meter No.: 00745957

Month	Total ($)	Delivery ($)	Supply ($)	Total Therms	$/Therm
Sep-10	$ 455.25			26	$ 17.51
Oct-10	$ 1,652.28			1,202	$ 1.37
Nov-10	$ 3,924.91			3,451	$ 1.14
Dec-10	$ 6,515.76			5,868	$ 1.11
Jan-11	$ 7,678.37			7,027	$ 1.09
Feb-11	$ 6,497.13			5,800	$ 1.12
Mar-11	$ 4,423.09			3,872	$ 1.14
Apr-11	$ 1,947.36			1,470	$ 1.32
May-11	$ 650.24			219	$ 2.97
Jun-11	$ 805.26			376	$ 2.14
Jul-11	$ 453.42			22	$ 20.70
Aug-11	$ 447.97			16	$ 27.32
Sep-11	$ 479.52			51	$ 9.46
Oct-11	$ 1,193.29			804	$ 1.48
Nov-11	$ 3,204.08			2,797	$ 1.15
Dec-11	$ 4,459.13			4,096	$ 1.09
Jan-12	$ 4,663.16			4,366	$ 1.07
Feb-12	$ 3,990.09			3,741	$ 1.07
Mar-12	$ 2,186.96			1,885	$ 1.16
Apr-12	$ 1,139.75			914	$ 1.25
May-12	$ 509.49			103	$ 4.95
Total (12-months)	**$ 23,532.12**	**$ -**	**$ -**	**19171**	**$ 1.23**


Natural Gas Usage - Eisenhower Middle School (12 Months)
$/Therm
Total Therms
$30.00
$25.00
$20.00
$15.00
$10.00
$5.00
$-
Cost ($)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
-
Usage (Therms)
Apr-11
Jun-11
Jul-11
Sep-11
Nov-11
Dec-11
Feb-12
Apr-12
May-12
Date

APPENDIX B

Equipment Inventory

New Jersey BPU Energy Audit Program
CHA #24454
Roxbury BOE
Eisenhower Middle School
Original Construction Date: 1969
Renovation/Addtion Date: 1993, 1996 & 2003

Description	QTY	Manufacturer Name	Model No.	Serial No.	Equipment Type / Utility	Capacity/Size/Efficiency	Location	Areas/Equipment Served	Date Installed	Remaining Useful Life (years)	Other Info.
CUV	43				Unit Ventilators / Ele Heat		Classrooms	School			
RTU-1	1	Lennox	LGA090H2BS3G	5604E10893	AHU / NG	2 HP, 130/104 7.5 Tons	Roof	School	2003	6	
RTU-2	1	Lennox	LGA060H2BH2G	5604E11176	AHU / NG	1.5 HP, 125/100 5 Tons	Roof	School	2003	6	
RTU-3	1	Lennox	LGA060H2BH2G	5604E11049	AHU / NG	1.5 HP, 125/100 5 Tons	Roof	School	2003	6	
RTU-4	1	Lennox	LGA120H2BH3G	5604E10839	AHU / NG	3 HP 240 MBH 12 Ton	Roof	School	2003	6	
RTU-5	1	Trane	TCD151C40AAA	BAYECON062BB	AHU Cooling Only	3 HP 15 Tons 6000 CFM	Roof	School	2003	6	
RTU-6	1	Trane	TCD151C40AAA	BAYECON062BB	AHU Cooling Only	3 HP 15 Tons 6000 CFM	Roof	School	2003	6	
RTU-7	1	Unknown			Condenser		Roof	Kitchen	2003	6	
RTU-8	1	Carrier	50JQ006--641	1194G62289	AHU Cooling Only	428/200 PSI	Roof	School	1994	2	
B-1	1	Buderus	G334	08249822-00-3097-0043	Boiler / NG	Input: 378 MBH / Output: 314 MBH /83% Eff	MER	School	2012	25	
B-2	1	Buderus	G334	08249822-00-3097-0044	Boiler / NG	Input: 378 MBH / Output: 314 MBH /83% Eff	MER	School	2012	25	
B-(3-10)	8	GB Boiler	GB160A	FL100640	Boiler / NG	142,080 Output / 160,000 Input /88% Efficiency	External Boiler Room	School	1993	6	
PP	2	Emerson	G157	6207-2ZJC3	HW Pump	5 HP Lead/Lag @ 87.5 Eff.	MER	School	2012	10	
DHW	1	Rudd Electric	ES120-36-G	RR1006E00069	DHW	36 kW 116 Gal.	Gym MER	School	2006	19	
DHW	1	Bradford White	MII50A63SF05	BH6562752	DHW	6 kW 50 Gal.	MER	School	1996	9	
DHW	1	Bradford White	M130L6DS-1NCWW	JC16373830	DHW	4.5 kW 30 Gal.	MER	School	2006	19	
DHW	1	AO Smith	EES-40-M202172000	MD02-1635165-917	DHW	4.5 kW 40 GAL.	MER	School	1993	6	
HV	1	Herman Nelson	GBSJF53304-01	363079	Heating & Ventilation		Gym MER	Gym	2008	0	

APPENDIX C

ECM Calculations

Summary of Energy Conservation Measures							
Energy Conservation Measure		**Approx. Costs ($)**	**Approx. Savings ($/year)**	**Payback (Years) w/o Incentive**	**Potential Incentive ($)***	**Payback (Years) w/ Incentive**	**Recommended For Implementation**
ECM-1	Install Condensiong Boilers	89,000	1,300	>20	5,300	>20	
ECM-2	Replace Electric DHW Heaters with Condensing Tankless DHW	19,000	3,000	6.3	1,100	6.0	X
ECM-3	Install Demand Control Ventilation in Auditorium	9,000	700	12.9	100	12.7	X
ECM-4	Install a Network Computer Power Management System	2,000	1,700	1.2	0	1.2	X
ECM-5	Replace Single Pane Windows With Double Pane	391,000	4,300	>20	0	>20	
ECM-6	Replace Existing Roof	2,283,000	4,300	>20	0	>20	
ECM-7	Lighting Replacement / Upgrades	11,000	3,800	2.9	2,900	2.1	X
ECM-8	Install Lighting Controls (Occupancy Sensors)	40,000	6,000	6.7	6,900	5.5	
ECM-9	Lighting Replacements with Lighting Controls (Occupancy Sensors)	51,000	9,700	5.3	9,900	4.2	

14,400 72,000
5.0

Roxbury Board of Education - NJBPU
CHA Project #24454
Eisenhower Middle School

ECM Summary Sheet

ECM-1 Install Condensiong Boilers

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
89,000	0	0	1,000	1,300	0	1,300	(0.6)	5,300	>20	>20

Expected Life: 25 years
Lifetime Savings: 0 kWh 25,000 therms $ 32,500

ECM-2 Replace Electric DHW Heaters with Condensing Tankless DHW

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
19,000	34,700	50	-1,100	3,000	0	3,000	2.2	1,100	6.3	6.0

Expected Life: 20 years
Lifetime Savings: 694,000 kWh -22,000 therms $ 60,000

ECM-3 Install Demand Control Ventilation in Auditorium

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
9,000	1,300	0	500	700	0	700	0.2	100	12.9	12.7

Expected Life: 15 years
Lifetime Savings: 19,500 kWh 7,500 therms $ 10,500

ECM-4 Install a Network Computer Power Management System

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
2,000	14,000	0	0	1,700	0	1,700	4.7	0	1.2	1.2

Expected Life: 5 years
Lifetime Savings: 70,000 kWh 0 therms $ 8,500

ECM-5 Replace Single Pane Windows With Double Pane

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
391,000	2,700	0	3,300	4,300	0	4,300	(0.7)	0	>20	>20

Expected Life: 30 years
Lifetime Savings: 81,000 kWh 99,000 therms $ 129,000

ECM-6 Replace Existing Roof

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
2,283,000	1,300	0	3,400	4,300	0	4,300	(0.9)	0	>20	>20

Expected Life: 30 years
Lifetime Savings: 39,000 kWh 102,000 therms $ 129,000

ECM-7 Lighting Replacement / Upgrades

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
11,000	31,000	20	0	3,800	0	3,800	4.2	2,900	2.9	2.1

Expected Life: 15 years
Lifetime Savings: 465,000 kWh 0 therms $ 57,000

ECM-8 Install Lighting Controls (Occupancy Sensors)

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
40,000	48,600	0	0	6,000	0	6,000	1.3	6,900	6.7	5.5

Expected Life: 15 years
Lifetime Savings: 729,000 kWh 0 therms $ 90,000

ECM-9 Lighting Replacements with Lighting Controls (Occupancy Sensors)

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
51,000	78,500	0	0	9,700	0	9,700	1.9	9,900	5.3	4.2

Expected Life: 15 years
Lifetime Savings: 1,177,500 kWh 0 therms $ 145,500

Roxbury Board of Education - NJBPU
CHA Project #24454

Utility Costs		Yearly Usage	MTCDE	Building Area	Annual Utility Cost	
$ 0.124	$/kWh blended		0.00042021	105,840	Electric	Natural Gas
$ 0.124	$/kWh supply	1,444,174	0.00042021		$ 179,021	$ 23,532
$ -	$/kW	4,351	0			
$ 1.23	$/Therm	19,171	0.00533471			
	$/kgals		0			

Eisenhower Middle School

	Item	Savings						Cost	Simple Payback	MTCDE	Life Expectancy	NJ Smart Start Incentives	Direct Install Eligible (Y/N)*	Direct Install Incentives**	Max Incentives	Payback w/ Incentives***	Simple Projected Lifetime Savings						ROI
		kW	kWh	therms	cooling kWh	kgal/yr	$										kW	kWh	therms	cooling	kgal/yr	$	
ECM-1	Install Condensiong Boilers	0.0	0	1,042	0	0	$ 1,300	$ 89,496	68.8	5.6	25	$ 5,250	N	$ -	$ 5,250	64.8	0.0	0	26,048	0	0	$ 31,973	(0.6)
ECM-2	Replace Electric DHW Heaters with Condensing Tankless DHW	46.5	34,721	(1,071)	0	0	$ 3,000	$ 18,744	6.2	8.9	20	$ 1,140	N	$ -	$ 1,140	5.9	930.0	694,411	(21,423)	0	0	$ 59,784	2.2
ECM-3	Install Demand Control Ventilation in Auditorium	0.0	1,304	460	0	0	$ 700	$ 8,850	12.6	3.0	15	$ 75	N	$ -	$ 75	12.5	0.0	19,560	6,903	0	0	$ 10,898	0.2
ECM-4	Install a Network Computer Power Management System	0.0	14,000	(30)	0	0	$ 1,700	$ 1,500	0.9	5.7	5		N	$ -	$ -	0.9	0.0	70,000	(148)	0	0	$ 8,496	4.7
ECM-5	Replace Single Pane Windows With Double Pane	0.0	0	3,264	2,749	0	$ 4,300	$ 390,600	90.8	18.6	30		N	$ -	$ -	90.8	0.0	0	97,921	82,481	0	$ 130,420	(0.7)
ECM-6	Replace Existing Roof	0.0	0	3,378	1,252	0	$ 4,300	$ 2,283,020	530.9	18.5	30		N	$ -	$ -	530.9	0.0	0	101,345	37,563	0	$ 129,055	(0.9)
ECM-7	Lighting Replacement / Upgrades	17.4	31,011	0	0	0	$ 3,800	$ 10,992	2.9	13.0	15	$ 2,920	N	$ -	$ 2,920	2.1	260.3	465,161	0	0	0	$ 57,662	4.2
ECM-8	Install Lighting Controls (Occupancy Sensors)	0.0	48,634	0	0	0	$ 6,000	$ 40,095	6.7	20.4	15	$ 6,930	N	$ -	$ 6,930	5.5	0.0	729,516	0	0	0	$ 90,432	1.3
ECM-9	Lighting Replacements with Lighting Controls (Occupancy Sensors)	17.4	78,495	0	0	0	$ 9,700	$ 51,087	5.3	33.0	15	$ 9,850	N	$ -	$ 9,850	4.3	260.3	1,177,428	0	0	0	$ 145,955	1.9
	Total (Does Not Include ECM-7 & ECM-8)	**63.9**	**128,520**	**7,044**	**4,001**	**0**	**$ 25,000**	**$ 2,843,297**	113.7		20.0	$ 16,315	N	$ -	$ 16,315	113.1	1,190.3	1,961,399	210,646	120,045	0	$ 516,581	(0.8)
	Total Measures with Payback <10	**63.9**	**127,216**	**(1,101)**	**0**	**0**	**$ 14,400**	**$ 71,331**	5.0		14.0	$ 10,990		$ -	$ 10,990	4.2	1,190.3	1,941,839	(21,570)	0	0	$ 214,235	2.0
	% of Existing	**1%**	**9%**	**37%**	**0%**	**#DIV/0!**																	

ECM-M3A: Boiler Replacement

Existing Fuel Nat.Gas
Proposed Fuel Nat.Gas

B-1

Item	Value	Units	Formula/Comments
Baseline Fuel Cost	$ 1.23	/ Therm	
Proposed Fuel Cost	$ 1.23	/ Therm	
Baseline Fuel Use	1,917	Therms	Based on historical utility data
Existing Boiler Plant Efficiency	83%		Estimated or Measured
Baseline Boiler Load	159,119	Mbtu/yr	Baseline Fuel Use x Existing Efficiency x 100 Mbtu/Therms
Baseline Fuel Cost	$ 2,353		
Proposed Boiler Plant Efficiency	92%		New Boiler Efficiency
Proposed Fuel Use	1,730	Therms	Baseline Boiler Load / Proposed Efficiency / 100 Mbtu/Therms
Proposed Fuel Cost	$ 2,123		

*Note to engineer: Link savings back to summary sheet in appropriate column.

B-2

Item	Value	Units	Formula/Comments
Baseline Fuel Cost	$ 1.23	/ Therm	
Proposed Fuel Cost	$ 1.23	/ Therm	
Baseline Fuel Use	1,917	Therms	Based on historical utility data
Existing Boiler Plant Efficiency	83%		Estimated or Measured
Baseline Boiler Load	159,119	Mbtu/yr	Baseline Fuel Use x Existing Efficiency x 100 Mbtu/Therms
Baseline Fuel Cost	$ 2,353		
Proposed Boiler Plant Efficiency	92%		New Boiler Efficiency
Proposed Fuel Use	1,730	Therms	Baseline Boiler Load / Proposed Efficiency / 100 Mbtu/Therms
Proposed Fuel Cost	$ 2,123		

B-3 - B-10

Item	Value	Units	Formula/Comments
Baseline Fuel Cost	$ 1.23	/ Therm	
Proposed Fuel Cost	$ 1.23	/ Therm	
Baseline Fuel Use	15,337	Therms	Based on historical utility data
Existing Boiler Plant Efficiency	88%		Estimated or Measured
Baseline Boiler Load	1,349,638	Mbtu/yr	Baseline Fuel Use x Existing Efficiency x 100 Mbtu/Therms
Baseline Fuel Cost	$ 18,826		
Proposed Boiler Plant Efficiency	92%		New Boiler Efficiency
Proposed Fuel Use	14,670	Therms	Baseline Boiler Load / Proposed Efficiency / 100 Mbtu/Therms
Proposed Fuel Cost	$ 18,007		

BOILER REPLACEMENT SAVINGS SUMMARY					
	Electric Demand	Electric Usage	Nat Gas Usage	Maint.	Total Cost
	(kW)	(kWh)	(Therms)	($)	($)
Savings	**0**	**0**	**1,042**	**$0**	**$1,279**

Multipliers	
Material:	1.00
Labor:	1.25
Equipment:	1.00

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
750 MBH Natural Gas Fired Condensing HW Boiler	2	EA	$ -	$ -	$ -	$ -	$ -	$ -	$ 35,000	
1,500 MBH Natural Gas Fired Condensing HW Boiler	1	EA	$ -	$ -	$ -				$ 27,500	
Miscellaneous Electrical	3	LS	$ 300			$ 897	$ -	$ -	$ 900	
Venting Kit	3	EA	$ 450	$ 650		$ 1,346	$ 2,430	$ -	$ 3,800	
Miscellaneous Piping and Valves	3	LS	$ 200			$ 598	$ -	$ -	$ 600	
						$ -	$ -	$ -	$ -	

$ 67,800	Subtotal
$ 6,780	10% Contingency
$ 14,916	20% Contractor O&P
$ -	
$ 89,496	**Total**

ECM-M14B: Replace Electric DHW Heater w/ Tankless Condensing Gas-Fired DHW Heater

Summary

* Replace Electric DHW Heater w/ Instantaneous, Condensing, Gas-Fired DHW Heater

Item	Value	Units	Formula/Comments
Occupied days per week	5	days/wk	
Water supply Temperature	55	°F	Termperature of water coming into building
Hot Water Temperature	120	°F	
Hot Water Usage per day	344	gal/day	Calculated from usage below
Annual Hot Water Energy Demand	48,437	MBTU/yr	Energy required to heat annual quantity of hot water to setpoint
Existing Tank Size	116	Gallons	Per manufacturer nameplate
Hot Water Temperature	140	°F	Per building personnel
Average Room Temperature	70	°F	
Standby Losses (% by Volume)	0.9%		Based off manufacturers nameplate
Standby Losses (Heat Loss)	0.4	MBH	
Annual Standby Hot Water Load	3,082	MBTU/yr	
Total Annual Hot Water Demand (w/ standby losses)	51,519	Mbtu/yr	Building demand plus standby losses
Existing Water Heater Efficiency	95%		Per Manufacturer
Total Annual Energy Required	54,231	Mbtu/yr	
Total Annual Electric Required	**15,889**	**kWh/yr**	**Electrical Savings**
Average Annual Electric Demand	1.81	kW	
Peak Electric Demand	**36.00**	**kW**	**Per Manufacturer's Nameplate (Demand Savings)**
New Tank Size	0	Gallons	tankless
Hot Water Temperature	140	°F	
Average Room Temperature	70	°F	
Standby Losses (% by Volume)	2.5%		(2.5% of stored capacity per hour, per U.S. Department of Energy)
Standby Losses (Heat Loss)	0.0	MBH	
Annual Standby Hot Water Load	0	MBTU/yr	
Prop Annual Hot Water Demand (w/ standby losses)	48,437	MBTU/yr	
Proposed Avg. Hot water heater efficiency	92%		Based on Navien CR180 instantaneous, condensing DHW Heater
Proposed Total Annual Energy Required	52,649	MBTU/yr	
Proposed Fuel Use	526	Therms/yr	Standby Losses and inefficient DHW heater eliminated
Elec Utility Demand Unit Cost	$0.00	$/kW	
Elec Utility Supply Unit Cost	$0.12	$/kWh	
NG Utility Unit Cost	$1.23	$/Therm	
Existing Operating Cost of DHW	$1,970	$/yr	
Proposed Operating Cost of DHW	$646	$/yr	
Annual Utility Cost Savings	**$1,323**	**$/yr**	

120,000 btuh

Item	Value	Units	Formula/Comments
Occupied days per week	5	days/wk	
Water supply Temperature	55	°F	Termperature of water coming into building
Hot Water Temperature	120	°F	
Hot Water Usage per day	248	gal/day	Calculated from usage below
Annual Hot Water Energy Demand	20,878	MBTU/yr	Energy required to heat annual quantity of hot water to setpoint
Existing Tank Size	50	Gallons	Per manufacturer nameplate
Hot Water Temperature	120	°F	Per building personnel
Average Room Temperature	70	°F	
Standby Losses (% by Volume)	2.5%		(2.5% of stored capacity per hour, per U.S. Department of Energy)
Standby Losses (Heat Loss)	0.5	MBH	
Annual Standby Hot Water Load	4,563	MBTU/yr	
Total Annual Hot Water Demand (w/ standby losses)	25,440	Mbtu/yr	Building demand plus standby losses
Existing Water Heater Efficiency	95%		Per Manufacturer
Total Annual Energy Required	26,779	Mbtu/yr	
Total Annual Electric Required	**7,846**	**kWh/yr**	**Electrical Savings**
Average Annual Electric Demand	0.90	kW	
Peak Electric Demand	**6.00**	**kW**	**Per Manufacturer's Nameplate (Demand Savings)**
New Tank Size	0	Gallons	tankless
Hot Water Temperature	120	°F	
Average Room Temperature	70	°F	
Standby Losses (% by Volume)	2.5%		(2.5% of stored capacity per hour, per U.S. Department of Energy)
Standby Losses (Heat Loss)	0.0	MBH	
Annual Standby Hot Water Load	0	MBTU/yr	
Prop Annual Hot Water Demand (w/ standby losses)	20,878	MBTU/yr	
Proposed Avg. Hot water heater efficiency	90%		Based on Navien CR180 instantaneous, condensing DHW Heater
Proposed Total Annual Energy Required	27,993	MBTU/yr	
Proposed Fuel Use	227	Therms/yr	Standby Losses and inefficient DHW heater eliminated
Elec Utility Demand Unit Cost	$0.00	$/kW	
Elec Utility Supply Unit Cost	$0.12	$/kWh	
NG Utility Unit Cost	$1.23	$/Therm	
Existing Operating Cost of DHW	$973	$/yr	
Proposed Operating Cost of DHW	$278	$/yr	
Annual Utility Cost Savings	**$694**	**$/yr**	

20,000 MBH

Item	Value	Units	Formula/Comments
Occupied days per week	5	days/wk	
Water supply Temperature	55	°F	Termperature of water coming into building
Hot Water Temperature	120	°F	
Hot Water Usage per day	119	gal/day	Calculated from usage below
Annual Hot Water Energy Demand	16,702	MBTU/yr	Energy required to heat annual quantity of hot water to setpoint
Existing Tank Size	40	Gallons	Per manufacturer nameplate
Hot Water Temperature	120	°F	Per building personnel
Average Room Temperature	70	°F	
Standby Losses (% by Volume)	2.5%		(2.5% of stored capacity per hour, per U.S. Department of Energy)
Standby Losses (Heat Loss)	0.4	MBH	
Annual Standby Hot Water Load	3,650	MBTU/yr	
Total Annual Hot Water Demand (w/ standby losses)	20,352	Mbtu/yr	Building demand plus standby losses
Existing Water Heater Efficiency	95%		Per Manufacturer
Total Annual Energy Required	21,479	Mbtu/yr	
Total Annual Electric Required	**6,277**	**kWh/yr**	**Electrical Savings**
Average Annual Electric Demand	0.72	kW	
Peak Electric Demand	**4.50**	**kW**	**Per Manufacturer's Nameplate (Demand Savings)**
New Tank Size	0	Gallons	tankless
Hot Water Temperature	120	°F	
Average Room Temperature	70	°F	
Standby Losses (% by Volume)	2.5%		(2.5% of stored capacity per hour, per U.S. Department of Energy)
Standby Losses (Heat Loss)	0.0	MBH	
Annual Standby Hot Water Load	0	MBTU/yr	
Prop Annual Hot Water Demand (w/ standby losses)	16,702	MBTU/yr	
Proposed Avg. Hot water heater efficiency	92%		Based on Navien CR180 instantaneous, condensing DHW Heater
Proposed Total Annual Energy Required	18,155	MBTU/yr	
Proposed Fuel Use	182	Therms/yr	Standby Losses and inefficient DHW heater eliminated
Elec Utility Demand Unit Cost	$0.00	$/kW	
Elec Utility Supply Unit Cost	$0.12	$/kWh	
NG Utility Unit Cost	$1.23	$/Therm	
Existing Operating Cost of DHW	$778	$/yr	
Proposed Operating Cost of DHW	$223	$/yr	
Annual Utility Cost Savings	**$555**	**$/yr**	

15,000 MBH

Item	Value	Units	Formula/Comments
Occupied days per week	5	days/wk	
Water supply Temperature	55	°F	Termperature of water coming into building
Hot Water Temperature	120	°F	
Hot Water Usage per day	89	gal/day	Calculated from usage below
Annual Hot Water Energy Demand	12,527	MBTU/yr	Energy required to heat annual quantity of hot water to setpoint
Existing Tank Size	30	Gallons	Per manufacturer nameplate
Hot Water Temperature	120	°F	Per building personnel
Average Room Temperature	70	°F	
Standby Losses (% by Volume)	2.5%		(2.5% of stored capacity per hour, per U.S. Department of Energy)
Standby Losses (Heat Loss)	0.3	MBH	
Annual Standby Hot Water Load	2,738	MBTU/yr	
Total Annual Hot Water Demand (w/ standby losses)	15,264	Mbtu/yr	Building demand plus standby losses
Existing Water Heater Efficiency	95%		Per Manufacturer
Total Annual Energy Required	16,126	Mbtu/yr	
Total Annual Electric Required	**4,708**	**kWh/yr**	**Electrical Savings**
Average Annual Electric Demand	0.54	kW	
Peak Electric Demand	**4.50**	**kW**	**Per Manufacturer's Nameplate (Demand Savings)**
New Tank Size	0	Gallons	tankless
Hot Water Temperature	120	°F	
Average Room Temperature	70	°F	
Standby Losses (% by Volume)	2.5%		(2.5% of stored capacity per hour, per U.S. Department of Energy)
Standby Losses (Heat Loss)	0.0	MBH	
Annual Standby Hot Water Load	0	MBTU/yr	
Prop Annual Hot Water Demand (w/ standby losses)	12,527	MBTU/yr	
Proposed Avg. Hot water heater efficiency	92%		Based on Navien CR180 instantaneous, condensing DHW Heater
Proposed Total Annual Energy Required	13,616	MBTU/yr	
Proposed Fuel Use	136	Therms/yr	Standby Losses and inefficient DHW heater eliminated
Elec Utility Demand Unit Cost	$0.00	$/kW	
Elec Utility Supply Unit Cost	$0.12	$/kWh	
NG Utility Unit Cost	$1.23	$/Therm	
Existing Operating Cost of DHW	$584	$/yr	
Proposed Operating Cost of DHW	$167	$/yr	
Annual Utility Cost Savings	**$416**	**$/yr**	

15,000 MBH

Daily Hot Water Demand

FIXTURE	*BASE WATER USE GPM	DURATION OF USE (MIN)	#USES PER DAY MALE	#USES PER DAY FEMALE	FULL TIME OCCUPANTS** MALE	FULL TIME OCCUPANTS** FEMALE	TOTAL GAL/DAY	% HOT WATER	TOTAL HW GAL/DAY
LAVATORY (Low-Flow Lavs use 0.5 GPM)	2.5	0.25	3	3	357	357	1339	50%	669
SHOWER	2.5	5	1	1			0	75%	0
KITCHEN SINK	2.5	0.5	1	1	3	3	8	75%	6
MOP SINK	2.5	2	1	1	2	2	20	75%	15
Dishwasher (gal	10	1	1	0	1		10	100%	10
						TOTAL	1366		700

Multipliers	
Material:	1.00
Labor:	1.00
Equipment:	1.00

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
Gas-Fired DHW Heater Removal	4	LS		$ 50		$ -	$ 200	$ -	$ 200	
120,000 btu/h High Efficiency Gas-Fired DHW Heater	1	LS	$ 4,000	$ 280		$ 3,988	$ 280	$ -	$ 4,300	
20,000 btu/h High Efficiency Tankless Gas-Fired DHW Heater	1	LS	$ 1,000	$ 150		$ 997	$ 150	$ -	$ 1,100	
15,000 btu/h High Efficiency Tankless Gas-Fired DHW Heater	2	LS	$ 950	$ 150		$ 1,894	$ 300	$ -	$ 2,200	
Miscellaneous Electrical	4	LS	$ 300			$ 1,196	$ -	$ -	$ 1,200	
Venting Kit	4	EA	$ 450	$ 650		$ 1,795	$ 2,600	$ -	$ 4,400	
Miscellaneous Piping and Valves	4	LS	$ 200			$ 798	$ -	$ -	$ 800	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	

$ 14,200	Subtotal
$ 1,420	10% Contingency
$ 3,124	20% Contractor O&P
$ -	
$ 18,744	**Total**

ECM-M8A: Install Demand Control Ventilation

Description:
Outside air can be significantly reduced for most of the time that the building is occupied.
Savings will result from the avoided heating and cooling of excessive outside air.

Method:
The outdoor air introduced into the spaces is currently constant based on design occupancy conditions.
This ECM proposes the installation of CO2 sensors in the space to allow for reduced outdoor air flows when c
An average reduction of 50% is assumed possible with the implementation of DCV
The DCV system will automatically adjust the outdoor air damper position through the EMS to reduce outdoo
This ECM has been interacted with the new boiler ECMs and accounts for the reduced operating hours of the

RTU-2

A	B	C	D	E	F	G	H	I
			Existing					
Avg. DB Bin Temp °F	OA Enthalpy Btu/lb	Occupied Bin HOURS	OA CFM	Cooling Load MBH	Heating Load MBH	Cooling kWh	Heating therms	Derated O.A. CFM
102.5	49.1	-	484	49	0	0	-	191
97.5	42.5	1	484	35	0	3	-	191
92.5	39.5	11	484	29	0	32	-	191
87.5	36.6	43	484	22	0	95	-	191
82.5	34	164	484	17	0	271	-	191
77.5	31.6	203	484	11	0	230	-	191
72.5	29.2	217	484	6	0	133	-	191
67.5	27	280	484	1	0	37	-	191
62.5	24.5	303	484	0	0	0	-	191
57.5	21.4	196	484	0	0	0	-	191
52.5	18.7	200	484	0	8	0	20	191
47.5	16.2	200	484	0	11	0	27	191
42.5	14.4	215	484	0	13	0	36	191
37.5	12.6	335	484	0	16	0	67	191
32.5	10.7	240	484	0	19	0	56	191
27.5	8.6	109	484	0	21	0	29	191
22.5	6.8	83	484	0	24	0	25	191
17.5	5.5	41	484	0	26	0	14	191
12.5	4.1	15	484	0	29	0	6	191
7.5	2.6	7	484	0	32	0	3	191
2.5	1	4	484	0	34	0	2	191
-2.5	0	-	484	0	37	0	-	191
-7.5	-1.5	-	484	0	39	0	-	191
Total		**2,868**		**171**		**800**	**282**	

RTU-3

A	B	C	D	E	F	G	H	I
			Existing					
Avg. DB Bin Temp °F	OA Enthalpy Btu/lb	Occupied Bin HOURS	OA CFM	Cooling Load MBH	Heating Load MBH	Cooling kWh	Heating therms	Derated O.A. CFM
102.5	49.1	-	705	72	0	0	-	210
97.5	42.5	1	705	51	0	5	-	210
92.5	39.5	11	705	42	0	46	-	210
87.5	36.6	43	705	32	0	139	-	210
82.5	34	164	705	24	0	395	-	210
77.5	31.6	203	705	16	0	335	-	210
72.5	29.2	217	705	9	0	193	-	210
67.5	27	280	705	2	0	53	-	210
62.5	24.5	303	705	0	0	0	-	210
57.5	21.4	196	705	0	0	0	-	210
52.5	18.7	200	705	0	12	0	29	210
47.5	16.2	200	705	0	16	0	39	210
42.5	14.4	215	705	0	19	0	52	210
37.5	12.6	335	705	0	23	0	97	210
32.5	10.7	240	705	0	27	0	81	210
27.5	8.6	109	705	0	31	0	42	210
22.5	6.8	83	705	0	35	0	36	210
17.5	5.5	41	705	0	38	0	20	210
12.5	4.1	15	705	0	42	0	8	210
7.5	2.6	7	705	0	46	0	4	210
2.5	1	4	705	0	50	0	3	210
-2.5	0	-	705	0	54	0	-	210
-7.5	-1.5	-	705	0	57	0	-	210
Total		**2,868**		**248**		**1,166**	**411**	

DEMAND CONTROL VENTILATION SAVINGS SUMMARY					
	Electric Demand	**Electric Usage**	**Nat Gas Usage**	**Maint.**	**Total Cost**
	(kW)	**(kWh)**	**(Therms)**	**($)**	**($)**
Savings	**0**	**1,304**	**460**	**$0**	**$565**

conditions allow.

r air flows based on indoor CO2 levels.
e unit via EMS scheduling.

J	K	L	M	N	O
Proposed Demand Ventilation				Savings	
Cooling Load MBH	Heating Load MBH	Cooling kWh	Heating therms	Cooling kWh	Heating therms
19	0	0	-	0	-
14	0	1	-	2	-
11	0	13	-	19	-
9	0	38	-	58	-
7	0	107	-	164	-
4	0	90	-	139	-
2	0	52	-	80	-
1	0	14	-	22	-
0	0	0	-	0	-
0	0	0	-	0	-
0	3	0	8	0	12
0	4	0	11	0	16
0	5	0	14	0	22
0	6	0	26	0	40
0	7	0	22	0	34
0	8	0	11	0	18
0	9	0	10	0	15
0	10	0	5	0	8
0	11	0	2	0	3
0	12	0	1	0	2
0	13	0	1	0	1
0	15	0	-	0	-
0	16	0	-	0	-
67		**315**	**111**	**485**	**171**

	Total CFM	O.A. CFM	O.A. %	
Org. scheduled CFM	1,270	484	38%	
Derated CFM	1,270	191	15%	
SA Enthalpy	26.4	BTU/lbma		
SA Set point, Winter	68.0	°F		
SA Set point, Summer	74.0	°F		
Heating "On" Point	55.0	°F		
Cooling System Eff.	1.20	kW/Ton		(Includes ancillary equipment)
Heating System Eff.	80%			(Includes distribution losses)

J	K	L	M	N	O
Proposed Demand Ventilation				Savings	
Cooling Load MBH	Heating Load MBH	Cooling kWh	Heating therms	Cooling kWh	Heating therms
21	0	0	-	0	-
15	0	1	-	4	-
12	0	14	-	32	-
10	0	41	-	97	-
7	0	118	-	277	-
5	0	100	-	235	-
3	0	58	-	136	-
1	0	16	-	37	-
0	0	0	-	0	-
0	0	0	-	0	-
0	4	0	9	0	21
0	5	0	12	0	27
0	6	0	16	0	37
0	7	0	29	0	68
0	8	0	24	0	57
0	9	0	13	0	30
0	10	0	11	0	25
0	11	0	6	0	14
0	13	0	2	0	6
0	14	0	1	0	3
0	15	0	1	0	2
0	16	0	-	0	-
0	17	0	-	0	-
74		**347**	**123**	**819**	**289**

	Total CFM	O.A. CFM	O.A. %	
Org. scheduled CFM	1,400	705	50%	
Derated CFM	1,400	210	15%	
SA Enthalpy	26.4	BTU/lbma		
SA Set point, Winter	-	°F		
SA Set point, Summer	-	°F		
Heating "On" Point	55.0	°F		
Cooling System Eff.	1.20	kW/Ton		(Includes ancillary equipment)
Heating System Eff.	80%			(Includes distribution losses)

Multipliers	
Material:	1.00
Labor:	1.25
Equipment:	1.00

ECM-M8A: Install Demand Control Ventilation - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
CO2 sensor	1	ea	$ 400	$ 100	$ -	$ 399	$ 125	$ -	$ 500	
Replace damper actuators	1	ea	$ 100	$ 50	$ -	$ 100	$ 62	$ -	$ 200	
Control system programming	1	ls	$ 500	$ 1,000	$ -	$ 499	$ 1,246	$ -	$ 1,700	
electrical/wiring	1	ls	$ 1,000	$ 2,000	$ -	$ 997	$ 2,492	$ -	$ 3,500	

$ 5,900	Subtotal
$ 1,180	20% Contingency
$ 885	15% Contractor O&P
$ 885	15% Engineering
$ 8,850	**Total**

ECM-3: Network Controller Savings Calculations

Notes:

1. Savings are for the installation of a centralized computer management system installed on the client server that will centralize the power management functions that are native to the Windows environment.
2. Energy savings per computer are based on historical information from previous installations encompassing tens of thousands of computers.
3. There are approximately 200 computers in all

Background Data Average Consumption and Savings Figures	kWh
Average Total Consumption per PC per Year	500-700
Average Energy and Cost Waste per PC per Year	350-450
Average savings per PC	70
Average savings per IMac	50

Number of PCs	200
Number of IMac's	0

Return on Investment Analysis	kWh
Annual Energy Savings	14,000
Annual Cost Savings	$1,735

HEATING PENALTY			Comments
Total kWh		14,000	This is the total kWh reduction.
Htg. Season		55%	The percentage of the kWh reduction that occurs when heat is required.
Conducted/Convected Heat		30%	Use Standard Fluorescent fixture
Regained		70%	Percentage regained. Assumed that RTUs bring in a minimum of 30% OA
Net kWh		693	Resultant kWh from percentage reductions.
Net btu		2,365,209	Conversion of kWh to btu's.
Therms		(24)	Conversion of btu's to Therms
Htg. Eff.		80%	Heating system efficiency.
Net Penalty		(29.6)	Therms
$/Therm	$	1.23	Cost per Therm
Penalty	$	(36)	Final heating reduction penalty.

ALL ESTIMATES ARE +/- 80% ACCURATE -DO NOT USE FOR PROCUREMENT

Note: pricing is for energy calculations only -do not use for procurement

ECM-16: Window Replacement

Existing: Windows are not energy efficiency single paned windows
Proposed: Install energy efficient vinyl windows

Linear Feet of window Edge	4,836.0 LF	Cooling System Efficiency	1.2 kW/ton	Heating System Efficiency	80%			
Area of window glass	3,906.0 SF	Ex Occupied Clng Temp.	74 *F	Heating On Temp.	60 *F			
Existing Infiltration Factor	**0.25 cfm/LF**	Ex Unoccupied Clng Temp.	78 *F	Ex Occupied Htg Temp.	68 *F			
Proposed Infiltration Factor	**0.10 cfm/LF**	Cooling Occ Enthalpy Setpoint	27.5 Btu/lb	Ex Unoccupied Htg Temp.	60 *F			
Existing U Value	**1.00 Btuh/SF/°F**	Cooling Unocc Enthalpy Setpoint	27.5 Btu/lb	Electricity	$ 0.124	$/kWh		
Proposed U Value	**0.60 Btuh/SF/°F**			Natural Gas	$ 1.23	$/therm		

					EXISTING LOADS		PROPOSED LOADS		COOLING ENERGY		HEATING ENERGY	
					Occupied	Unoccupied	Occupied	Unoccupied				
Avg Outdoor Air Temp. Bins °F	Avg Outdoor Air Enthalpy	Existing Equipment Bin Hours	Occupied Equipment Bin Hours	Unoccupied Equipment Bin Hours	Window Infiltration & Heat Load BTUH	Window Infiltration & Heat Load BTUH	Window Infiltration & Heat Load BTUH	Window Infiltration & Heat Load BTUH	Existing Cooling Energy kWh	Proposed Cooling Energy kWh	Existing Heating Energy Therms	Proposed Heating Energy Therms
A		B	C	D	E	F	G	H	I	J	K	L
102.5	50.1	0	0	0	-234,276	-218,652	-115,975	-106,600	0	0	0	0
97.5	42.5	3	1	2	-173,399	-157,775	-87,718	-78,343	49	24	0	0
92.5	39.5	34	11	23	-137,547	-121,923	-69,471	-60,097	432	215	0	0
87.5	36.6	131	43	88	-102,240	-86,616	-51,442	-42,068	1202	591	0	0
82.5	34.0	500	164	336	-68,564	-52,940	-34,066	-24,692	2903	1388	0	0
77.5	31.6	620	203	417	-35,977	0	-17,125	0	730	348	0	0
72.5	29.2	664	217	447	0	0	0	0	0	0	0	0
67.5	27.0	854	280	574	0	0	0	0	0	0	0	0
62.5	24.5	927	303	624	0	0	0	0	0	0	0	0
57.5	21.4	600	196	404	54,723	13,029	30,092	7,165	0	0	200	110
52.5	18.7	610	200	410	80,782	39,088	44,421	21,494	0	0	402	221
47.5	16.2	611	200	411	106,840	65,147	58,751	35,824	0	0	602	331
42.5	14.4	656	215	441	132,899	91,205	73,080	50,153	0	0	860	473
37.5	12.6	1,023	335	688	158,957	117,264	87,410	64,482	0	0	1,674	921
32.5	10.7	734	240	494	185,016	143,322	101,739	78,812	0	0	1,440	792
27.5	8.6	334	109	225	211,075	169,381	116,068	93,141	0	0	764	420
22.5	6.8	252	83	170	237,133	195,440	130,398	107,471	0	0	659	362
17.5	5.5	125	41	84	263,192	221,498	144,727	121,800	0	0	367	202
12.5	4.1	47	15	32	289,250	247,557	159,057	136,130	0	0	153	84
7.5	2.6	22	7	15	315,309	273,615	173,386	150,459	0	0	79	43
2.5	1.0	13	4	9	341,368	299,674	187,716	164,789	0	0	51	28
0.0	0.0	0	0	0	354,397	312,703	194,880	171,953	0	0	0	0
TOTALS		**8,760**	**2,868**	**5,892**					5315	2566	**7,252**	**3,988**

Existing Window Infiltration	**1,209 cfm**
Existing Window Heat Transfer	**3,906 Btuh/°F**
Proposed Window Infiltration	**484 cfm**
Proposed Window Heat Transfer	**2,344 Btuh/°F**

Savings	**3,264**	**Therms**	**$ 4,007**
	2,749	**kWh**	**$ 341**
			$ 4,347

Window ID	Location	Quantity	Width (ft)	Height (ft)	Linear Feet (LF)	Area (SF)	Infiltration Rate (CFM/LF)	U Value (Btuh/SF/°F)	Infiltration (CFM)	Heat Transfer (Btuh/°F)
1	North Top	22	3.5	2.5	264.0	192.5	0.25	1.00	66.0	192.5
2	North Bottom	22	3.5	3.5	308.0	269.5	0.25	1.00	77.0	269.5
3	South Top	83	3.5	2.5	996.0	726.3	0.25	1.00	249.0	726.3
4	South Bottom	83	3.5	3.5	1162.0	1016.8	0.25	1.00	290.5	1016.8
5	East Top	59	3.5	2.5	708.0	516.3	0.25	1.00	177.0	516.3
6	East Bottom	59	3.5	3.5	826.0	722.8	0.25	1.00	206.5	722.8
7	West Top	22	3.5	2.5	264.0	192.5	0.25	1.00	66.0	192.5
8	West Bottom	22	3.5	3.5	308.0	269.5	0.25	1.00	77.0	269.5
Total		**372**	**28**	**24**	**4,836.0**	**3,906.0**	**0.25**	**1.00**	**1209.0**	**3,906.0**

Note: pricing is for energy calculations only -do not use for procurement

ECM-17 Roof Replacement

Existing: Ceiling can lead to increased energy consumption due to infiltration/exfiltration and heat gain/loss.
Proposed: Install EPDM roofing membrane system to reduce heat transfer.

Area of ceiling	114,151	SF	Cooling System Efficiency	1.2	kW/ton	Heating System Efficiency	80%	
Existing Infiltration Factor	**0.20**	**cfm/SF**	Ex Occupied Clng Temp.	74	*F	Heating On Point	58	*F
Proposed Infiltration Factor	**0.20**	**cfm/SF**	Ex Unoccupied Clng Temp.	78	*F	Ex Occupied Htg Temp.	68	*F
Existing U Value	**0.077**	**Btuh/SF/°F**	Cooling Occ Enthalpy Setpoint	27.5	Btu/lb	Ex Unoccupied Htg Temp.	60	*F
Proposed U Value	**0.056**	**Btuh/SF/°F**	Cooling Unocc Enthalpy Setpoint	27.5	Btu/lb	Electricity	$ 0.124	$/kWh
(Loose-Fill R-2.7/inch)						Natural Gas	$ 1.23	$/Therm

					EXISTING LOADS		PROPOSED LOADS		COOLING ENERGY		HEATING ENERGY	
					Occupied	Unoccupied	Occupied	Unoccupied				
Avg Outdoor Air Temp. Bins °F	**Avg Outdoor Air Enthalpy**	**Existing Equipment Bin Hours**	**Occupied Equipment Bin Hours**	**Unoccupied Equipment Bin Hours**	**Wall Infiltration & Heat Load BTUH**	**Wall Infiltration & Heat Load BTUH**	**Wall Infiltration & Heat Load BTUH**	**Wall Infiltration & Heat Load BTUH**	**Existing Cooling Energy kWh**	**Proposed Cooling Energy kWh**	**Existing Heating Energy Therm**	**Proposed Heating Energy Therm**
A		**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**
97.5	42.5	0	0	0	(1,747,388)	(1,712,265)	(1,690,069)	(1,664,702)	-	-	-	-
92.5	39.5	36	10	26	(1,395,276)	(1,360,153)	(1,350,153)	(1,324,786)	4,930	4,794	-	-
87.5	36.6	123	33	90	(1,053,438)	(1,018,315)	(1,020,510)	(995,143)	12,641	12,324	-	-
82.5	34.0	477	128	349	(742,421)	(707,297)	(721,688)	(696,321)	34,187	33,539	-	-
77.5	31.6	656	176	480	(451,950)	0	(443,413)	0	7,941	7,791	-	-
72.5	29.2	742	199	543	0	0	0	0	-	-	-	-
67.5	27.0	784	210	574	0	0	0	0	-	-	-	-
62.5	24.5	983	263	720	0	0	0	0	-	-	-	-
57.5	21.4	625	167	458	351,093	83,594	325,483	77,496	-	-	1,213	1,124
52.5	18.7	438	117	321	518,281	250,781	480,474	232,488	-	-	1,765	1,637
47.5	16.2	559	150	409	685,468	417,968	635,466	387,479	-	-	3,421	3,172
42.5	14.4	671	180	491	852,655	585,156	790,458	542,471	-	-	5,509	5,107
37.5	12.6	1,067	286	781	1,019,843	752,343	945,449	697,463	-	-	10,990	10,188
32.5	10.7	685	183	502	1,187,030	919,530	1,100,441	852,454	-	-	8,487	7,868
27.5	8.6	369	99	270	1,354,217	1,086,718	1,255,433	1,007,446	-	-	5,343	4,953
22.5	6.8	321	86	235	1,521,405	1,253,905	1,410,424	1,162,438	-	-	5,319	4,931
17.5	5.5	184	49	135	1,688,592	1,421,092	1,565,416	1,317,429	-	-	3,433	3,183
12.5	4.1	40	11	29	1,855,779	1,588,279	1,720,408	1,472,421	-	-	830	769
7.5	2.6	0	0	0	2,022,966	1,755,467	1,875,399	1,627,413	-	-	-	-
2.5	1.0	0	0	0	2,190,154	1,922,654	2,030,391	1,782,404	-	-	-	-
-2.5	0.0	0	0	0	2,357,341	2,089,841	2,185,383	1,937,396	-	-	-	-
-7.5	-1.5	0	0	0	2,524,528	2,257,029	2,340,375	2,092,388	-	-	-	-
-12.5	-2.8	0	0	0	2,691,716	2,424,216	2,495,366	2,247,380	-	-	-	-
TOTALS		**8,760**	**2,346**	**6,414**					59,700	58,448	**46,310**	**42,932**

Existing Ceiling Infiltration	**22,830**	**cfm**
Existing Ceiling Heat Transfer	**8,781**	**Btuh/°F**
Proposed Ceiling Infiltration	**22,830**	**cfm**
Proposed Ceiling Heat Transfer	**6,342**	**Btuh/°F**

Savings	**3,378**	**Therm**	**$ 4,147**
	1,252	**kWh**	**$ 155**
			$ 4,302

Roxbury Board of Education - NJBPU
CHA Project #24454
Eisenhower Middle School

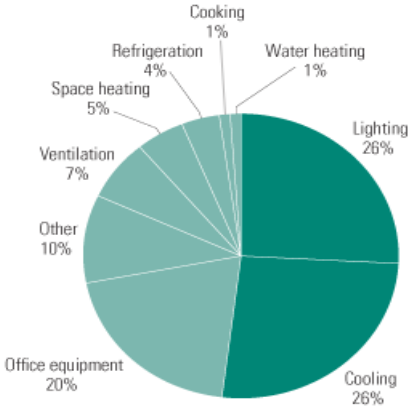
Commission District BAS and Integrate Existing HVAC Equipment

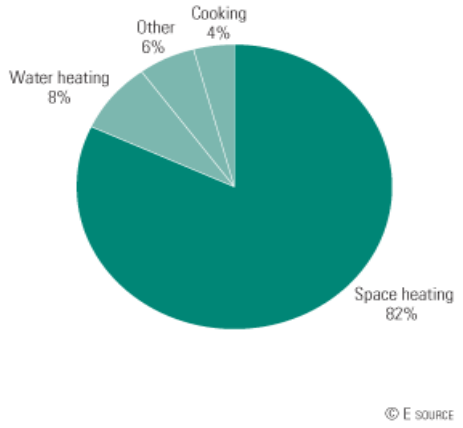
105,840 Sq Footage

EXISTING CONDITIONS		
Existing Facility Total Electric usage	1,444,174	kWh
Existing Facility Total Gas usage	19,171	Therms
Existing Facility Cooling Electric usage	375,485	kWh[1]
Existing Facility Heating Natural Gas usage	15720.302	Therms[2]
PROPOSED CONDITIONS		
Proposed Facility Cooling Electric Savings	75,097	kWh
Proposed Facility Natural Gas Savings	3144.0604	Therms
SAVINGS		
Retro-Commissioning Electric Savings	75,097	**kWh**
Retro-Commissioning Natural Gas Savings	3,144	**Therms**
Total cost savings	$ 13,168	
Estimated Total Project Cost	$ 105,840	[4]
Simple Payback	8.0	**years**

Assumptions

1 26% of facility total electricity dedicated to Cooling; Source: E source, data from U.S. Energy Information Administration
2 82% of facility total natural gas dedicated to Heating; Source: E source, data from U.S. Energy Information Administration
3 20% Typical Savings associated with Retro-Commissioning of controls based on previous project experience
4 $ 1.00 Based on $1.00 / Sq Ft commissioning cost





ECM-1 Lighting Replacements

Budgetary	Annual Utility Savings				Estimated	Total	New Jersey	Payback	Payback
Cost					Maintenance	Savings	Incentive	(without incentive)	(with incentive)
					Savings				
$	kW	kWh	therms	$	$	$	$	Years	Years
$10,992	**17.4**	**31,011**	**0**	**$4,722**	**0**	**$4,722**	**$2,920**	**2.3**	**1.7**

*Incentive based on New Jersey Smart Start Prescriptive Lighting Measures

ECM-2 Install Occupancy Sensors

Budgetary	Annual Utility Savings				Estimated	Total	New Jersey	Payback	Payback
Cost					Maintenance	Savings	Incentive	(without incentive)	(with incentive)
					Savings				
$	kW	kWh	therms	$	$	$	$	Years	Years
$40,095	**0.0**	**48,634**	**0**	**$5,204**	**0**	**$5,204**	**$6,930**	**7.7**	**6.4**

*Incentive based on New Jersey Smart Start Prescriptive Lighting Measures

ECM-3 Lighting Replacements with Occupancy Sensors

Budgetary	Annual Utility Savings				Estimated	Total	New Jersey	Payback	Payback
Cost					Maintenance	Savings	Incentive	(without incentive)	(with incentive)
					Savings				
$	kW	kWh	therms	$	$	$	$	Years	Years
$51,087	**17.4**	**78,495**	**0**	**$9,802**	**0**	**$9,802**	**$9,850**	**5.2**	**4.2**

*Incentive based on New Jersey Smart Start Prescriptive Lighting Measures

Energy Audit of Eisenhower Middle School

CHA Project No.24454

Existing Lighting

Cost of Electricity: $0.107 $/kWh
$6.74 $/kW

			EXISTING CONDITIONS								
	Area Description	**Usage**	**No. of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/Space**	**Exist Control**	**Annual Hours**	**Retrofit Control**	**Annual kWh**
20	Main Office Common	Hallways	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2280	SW	438
20	Main Office Common	Hallways	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2280	SW	438
20	Main Office Common	Hallways	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2280	SW	146
20	Main Office Common	Hallways	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	2280	SW	73
20	Main Office Common	Hallways	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	2280	SW	73
11	Main Office	Offices	1	S 34 P F 2 (MAG)	F42EE	72	0.07	SW	2400	C-OCC	173
20	Main Office	Offices	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	2400	C-OCC	307
20	Main Office	Offices	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2400	C-OCC	154
20	Main Office	Offices	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	2400	C-OCC	307
20	Main Office	Offices	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2400	C-OCC	154
20	Main Office	Offices	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	2400	C-OCC	307
20	Main Office	Offices	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2400	C-OCC	154
20	Main Office	Offices	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	2400	C-OCC	307
20	Guidance Common	Hallways	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2280	SW	438
20	Guidance	Offices	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2400	C-OCC	154
20	Guidance	Offices	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2400	C-OCC	154
20	Guidance	Offices	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2400	C-OCC	154
20	Faculty Room	Offices	3	S 32 C F 1 (ELE)	F41LL	32	0.10	SW	2400	C-OCC	230
20	Faculty Room	Offices	3	S 32 C F 1 (ELE)	F41LL	32	0.10	SW	2400	C-OCC	230
20	Faculty Room	Offices	3	S 32 C F 1 (ELE)	F41LL	32	0.10	SW	2400	C-OCC	230
20	Faculty Room	Offices	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	2400	C-OCC	77
20	B Hall Men's Bathroom	Bath Room	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	2000	SW	64
20	B Hall Women's Bathroom	Bath Room	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	2000	SW	64
20	B Hall Closet 1	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	SW	32
108	B Hall Closet 2	Storage Areas	2	I 65	I65/1	65	0.13	SW	1000	SW	130
133	B Hall Closet 2	Storage Areas	1	CF 26	CFQ26/1-L	27	0.03	SW	1000	SW	27
20	B Hall Office 1	Offices	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	2400	C-OCC	307
20	Nurse	Offices	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2400	C-OCC	461
20	Nurse	Offices	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	2400	C-OCC	77
15	Nurse Bathroom	Bath Room	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2000	SW	120
20	Nurse Closet	Storage Areas	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	1000	SW	64
20	B Hall Office 2	Offices	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	2400	C-OCC	307
20	1	Classrooms	18	S 32 C F 1 (ELE)	F41LL	32	0.58	SW	2400	C-OCC	1,382
15	1	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	1	Classrooms	9	S 32 C F 1 (ELE)	F41LL	32	0.29	SW	2400	C-OCC	691
15	1	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	B Hall Small Classroom	Classrooms	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2400	C-OCC	461
20	2	Classrooms	16	S 32 C F 1 (ELE)	F41LL	32	0.51	SW	2400	C-OCC	1,229
15	2	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	2	Classrooms	8	S 32 C F 1 (ELE)	F41LL	32	0.26	SW	2400	C-OCC	614
15	2	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	3	Classrooms	12	S 32 C F 1 (ELE)	F41LL	32	0.38	SW	2400	C-OCC	922
15	3	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	3	Classrooms	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2400	C-OCC	461
15	3	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	4	Classrooms	12	S 32 C F 1 (ELE)	F41LL	32	0.38	SW	2400	C-OCC	922
15	4	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	4	Classrooms	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2400	C-OCC	461
15	4	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	B Hall Boy's Bathroom	Bath Room	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2000	SW	128
20	B Hall Girl's Bathroom	Bath Room	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2000	SW	128
20	Media Center	Classrooms	14	S 32 C F 1 (ELE)	F41LL	32	0.45	SW	2400	C-OCC	1,075
20	Media Center	Classrooms	14	S 32 C F 1 (ELE)	F41LL	32	0.45	SW	2400	C-OCC	1,075
20	Media Center	Classrooms	14	S 32 C F 1 (ELE)	F41LL	32	0.45	SW	2400	C-OCC	1,075
20	Media Center	Classrooms	14	S 32 C F 1 (ELE)	F41LL	32	0.45	SW	2400	C-OCC	1,075

Energy Audit of Eisenhower Middle School

CHA Project No.24454

Existing Lighting

Cost of Electricity: **$0.107** **$/kWh**

$6.74 **$/kW**

			EXISTING CONDITIONS									
	Area Description	**Usage**	**No. of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/Space**	**Exist Control**	**Annual Hours**	**Retrofit Control**	**Annual kWh**	
20	Media Center	Classrooms	14	S 32 C F 1 (ELE)	F41LL	32	0.45	SW	2400	C-OCC	1,075	
20	5	Classrooms	16	S 32 C F 1 (ELE)	F41LL	32	0.51	SW	2400	C-OCC	1,229	
15	5	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	5	Classrooms	8	S 32 C F 1 (ELE)	F41LL	32	0.26	SW	2400	C-OCC	614	
15	5	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	6	Classrooms	12	S 32 C F 1 (ELE)	F41LL	32	0.38	SW	2400	C-OCC	922	
15	6	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	6	Classrooms	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2400	C-OCC	461	
15	6	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	7	Classrooms	14	S 32 C F 1 (ELE)	F41LL	32	0.45	SW	2400	C-OCC	1,075	
15	7	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	7	Classrooms	7	S 32 C F 1 (ELE)	F41LL	32	0.22	SW	2400	C-OCC	538	
15	7	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	8	Classrooms	20	S 32 C F 1 (ELE)	F41LL	32	0.64	SW	2400	C-OCC	1,536	
15	8	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	8	Classrooms	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	2400	C-OCC	768	
15	8	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	8 Storage	Storage Areas	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	1000	SW	64	
20	9	Classrooms	12	S 32 C F 1 (ELE)	F41LL	32	0.38	SW	2400	C-OCC	922	
15	9	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	9	Classrooms	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2400	C-OCC	461	
15	9	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	10	Classrooms	16	S 32 C F 1 (ELE)	F41LL	32	0.51	SW	2400	C-OCC	1,229	
15	10	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	10	Classrooms	8	S 32 C F 1 (ELE)	F41LL	32	0.26	SW	2400	C-OCC	614	
15	10	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	10 Storage	Storage Areas	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	1000	SW	64	
15	10A	Classrooms	4	S 32 C F 2 (ELE)	F42LL	60	0.24	SW	2400	C-OCC	576	
20	11	Classrooms	12	S 32 C F 1 (ELE)	F41LL	32	0.38	SW	2400	C-OCC	922	
15	11	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	11	Classrooms	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2400	C-OCC	461	
15	11	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	12	Classrooms	12	S 32 C F 1 (ELE)	F41LL	32	0.38	SW	2400	C-OCC	922	
15	12	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	12	Classrooms	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2400	C-OCC	461	
15	12	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	13	Classrooms	12	S 32 C F 1 (ELE)	F41LL	32	0.38	SW	2400	C-OCC	922	
15	13	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	13	Classrooms	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2400	C-OCC	461	
15	13	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	14	Classrooms	16	S 32 C F 1 (ELE)	F41LL	32	0.51	SW	2400	C-OCC	1,229	
15	14	Classrooms	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	2400	C-OCC	432	
20	14	Classrooms	8	S 32 C F 1 (ELE)	F41LL	32	0.26	SW	2400	C-OCC	614	
15	14	Classrooms	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	2400	C-OCC	432	
245	15	Classrooms	18	T 32 R F 3 (ELE)	F43LE	110	1.98	SW	2400	C-OCC	4,752	
245	15 Storage 1	Storage Areas	2	T 32 R F 3 (ELE)	F43LE	110	0.22	SW	1000	SW	220	
245	15 Storage 2	Storage Areas	2	T 32 R F 3 (ELE)	F43LE	110	0.22	SW	1000	SW	220	
245	16	Classrooms	12	T 32 R F 3 (ELE)	F43LE	110	1.32	SW	2400	C-OCC	3,168	
245	17	Classrooms	12	T 32 R F 3 (ELE)	F43LE	110	1.32	SW	2400	C-OCC	3,168	
245	18	Classrooms	12	T 32 R F 3 (ELE)	F43LE	110	1.32	SW	2400	C-OCC	3,168	
245	19	Classrooms	12	T 32 R F 3 (ELE)	F43LE	110	1.32	SW	2400	C-OCC	3,168	
15	20	Classrooms	12	S 32 C F 2 (ELE)	F42LL	60	0.72	SW	2400	C-OCC	1,728	
20	21	Classrooms	16	S 32 C F 1 (ELE)	F41LL	32	0.51	SW	2400	C-OCC	1,229	
15	21	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	21	Classrooms	8	S 32 C F 1 (ELE)	F41LL	32	0.26	SW	2400	C-OCC	614	

Energy Audit of Eisenhower Middle School

CHA Project No.24454

Existing Lighting

Cost of Electricity:		
	$0.107	$/kWh
	$6.74	$/kW

			EXISTING CONDITIONS								
	Area Description	**Usage**	**No. of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/Space**	**Exist Control**	**Annual Hours**	**Retrofit Control**	**Annual kWh**
15	21	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
15	22	Classrooms	12	S 32 C F 2 (ELE)	F42LL	60	0.72	SW	2400	C-OCC	1,728
20	23	Classrooms	14	S 32 C F 1 (ELE)	F41LL	32	0.45	SW	2400	C-OCC	1,075
15	23	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	23	Classrooms	7	S 32 C F 1 (ELE)	F41LL	32	0.22	SW	2400	C-OCC	538
15	23	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
15	24	Classrooms	9	S 32 C F 2 (ELE)	F42LL	60	0.54	SW	2400	C-OCC	1,296
20	25	Classrooms	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	2400	C-OCC	768
15	25	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	25	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	25	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
15	26	Classrooms	9	S 32 C F 2 (ELE)	F42LL	60	0.54	SW	2400	C-OCC	1,296
20	27	Classrooms	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	2400	C-OCC	768
15	27	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	27	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	27	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	28	Classrooms	12	S 32 C F 1 (ELE)	F41LL	32	0.38	SW	2400	C-OCC	922
15	28	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	28	Classrooms	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2400	C-OCC	461
15	28	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	D Hall Closet 1	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	SW	32
15	D Hall Closet 2	Storage Areas	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	1000	SW	60
11	D Hall Closet 3	Storage Areas	1	S 34 P F 2 (MAG)	F42EE	72	0.07	SW	1000	SW	72
20	D Hall Closet 3	Storage Areas	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	1000	SW	64
20	D Hall Closet 4	Storage Areas	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	1000	SW	128
20	A Hall Boy's Bathroom	Bath Room	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2000	SW	128
20	A Hall Girl's Bathroom	Bath Room	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2000	SW	128
20	29/30	Classrooms	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	2400	C-OCC	768
15	29/30	Classrooms	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2400	C-OCC	144
20	29/30	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	29/30	Classrooms	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2400	C-OCC	144
20	29/30	Classrooms	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	2400	C-OCC	768
15	29/30	Classrooms	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2400	C-OCC	144
20	29/30	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	29/30	Classrooms	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2400	C-OCC	144
20	Cafeteria	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.35	SW	1600	C-OCC	563
20	Cafeteria	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.35	SW	1600	C-OCC	563
20	Cafeteria	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.35	SW	1600	C-OCC	563
20	Cafeteria	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.35	SW	1600	C-OCC	563
20	Cafeteria	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.35	SW	1600	C-OCC	563
20	Cafeteria	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.35	SW	1600	C-OCC	563
20	Cafeteria	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.35	SW	1600	C-OCC	563
20	Kitchen	Cafeteria	35	S 32 C F 1 (ELE)	F41LL	32	1.12	SW	1600	C-OCC	1,792
20	Kitchen Storage Large	Storage Areas	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	1000	SW	192
20	Kitchen Office	Offices	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2400	C-OCC	154
20	Kitchen Storage A	Storage Areas	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	1000	SW	64
20	Kitchen Storage B	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	SW	32
20	Kitchen Storage C	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	SW	32
20	Kitchen Storage D	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	SW	32
20	Kitchen Storage E	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	SW	32
20	Kitchen Storage F	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	SW	32
146	Gym	Gynasium	14	High Bay MH 400	MH400/1	458	6.41	SW	2000	C-OCC	12,824
146	Gym	Gynasium	14	High Bay MH 400	MH400/1	458	6.41	SW	2000	C-OCC	12,824
20	Gym Office	Offices	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	2400	C-OCC	307
20	Gym Area Mechanical 1	Storage Areas	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	1000	SW	128

Energy Audit of Eisenhower Middle School

CHA Project No.24454

Existing Lighting

Cost of Electricity: **$0.107** **$/kWh**

$6.74 **$/kW**

			EXISTING CONDITIONS								
	Area Description	**Usage**	**No. of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/Space**	**Exist Control**	**Annual Hours**	**Retrofit Control**	**Annual kWh**
20	Gym Area Mechanical 2	Storage Areas	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	1000	SW	64
20	Boy's Locker Room	Locker	19	S 32 C F 1 (ELE)	F41LL	32	0.61	SW	2800	C-OCC	1,702
20	Boy's Locker Room	Locker	3	S 32 C F 1 (ELE)	F41LL	32	0.10	SW	2800	C-OCC	269
15	Boy's Locker Room	Locker	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	2800	C-OCC	504
15	Boy's Locker Room	Locker	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2800	C-OCC	168
5	Boy's Locker Room	Locker	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.06	SW	2800	C-OCC	168
108	Boy's Locker Room	Locker	2	I 65	I65/1	65	0.13	SW	2800	C-OCC	364
20	Girl's Locker Room	Locker	8	S 32 C F 1 (ELE)	F41LL	32	0.26	SW	2800	C-OCC	717
20	Girl's Locker Room	Locker	8	S 32 C F 1 (ELE)	F41LL	32	0.26	SW	2800	C-OCC	717
20	Girl's Locker Room	Locker	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	2800	C-OCC	358
20	Girl's Locker Room	Locker	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2800	C-OCC	179
15	Girl's Locker Room	Locker	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2800	C-OCC	168
15	Girl's Locker Room	Locker	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2800	C-OCC	168
11	Girl's Locker Room	Locker	2	S 34 P F 2 (MAG)	F42EE	72	0.14	SW	2800	C-OCC	403
191	Girl's Locker Room	Locker	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.12	SW	2800	C-OCC	344
191	Girl's Locker Room	Locker	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.12	SW	2800	C-OCC	344
20	Gym Front Storage Room	Storage Areas	8	S 32 C F 1 (ELE)	F41LL	32	0.26	SW	1000	SW	256
20	Gym Back Storage Room	Storage Areas	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	1000	SW	192
15	31	Classrooms	9	S 32 C F 2 (ELE)	F42LL	60	0.54	SW	2400	C-OCC	1,296
15	31	Classrooms	10	S 32 C F 2 (ELE)	F42LL	60	0.60	SW	2400	C-OCC	1,440
15	31	Classrooms	9	S 32 C F 2 (ELE)	F42LL	60	0.54	SW	2400	C-OCC	1,296
15	31 Storage	Storage Areas	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	1000	SW	120
15	31/33 Shared Room	Storage Areas	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	1000	SW	120
15	31A	Classrooms	10	S 32 C F 2 (ELE)	F42LL	60	0.60	SW	2400	C-OCC	1,440
1	31A	Classrooms	2	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.06	SW	2400	C-OCC	149
20	32	Classrooms	18	S 32 C F 1 (ELE)	F41LL	32	0.58	SW	2400	C-OCC	1,382
15	32	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	32	Classrooms	9	S 32 C F 1 (ELE)	F41LL	32	0.29	SW	2400	C-OCC	691
15	32	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
254	33	Classrooms	12	T 32 R F 4 (ELE)	F44LL	118	1.42	SW	2400	C-OCC	3,398
245	33	Classrooms	3	T 32 R F 3 (ELE)	F43LE	110	0.33	SW	2400	C-OCC	792
213	34	Classrooms	11	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.99	SW	2400	C-OCC	2,376
20	35	Classrooms	12	S 32 C F 1 (ELE)	F41LL	32	0.38	SW	2400	C-OCC	922
15	35	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	35	Classrooms	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2400	C-OCC	461
15	35	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
213	36	Classrooms	8	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.72	SW	2400	C-OCC	1,728
213	37	Classrooms	12	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.08	SW	2400	C-OCC	2,592
20	37 Closet	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	SW	32
20	38	Classrooms	12	S 32 C F 1 (ELE)	F41LL	32	0.38	SW	2400	C-OCC	922
15	38	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	38	Classrooms	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2400	C-OCC	461
15	38	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	39	Classrooms	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	2400	C-OCC	768
15	39	Classrooms	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2400	C-OCC	144
20	39	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	39	Classrooms	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2400	C-OCC	144
20	39	Classrooms	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	2400	C-OCC	768
15	39	Classrooms	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2400	C-OCC	144
20	39	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	39	Classrooms	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2400	C-OCC	144
20	40	Classrooms	16	S 32 C F 1 (ELE)	F41LL	32	0.51	SW	2400	C-OCC	1,229
15	40	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
15	40	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	40 Closet 1	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	SW	32

Energy Audit of Eisenhower Middle School

CHA Project No.24454

Existing Lighting

Cost of Electricity: **$0.107** **$/kWh**

$6.74 **$/kW**

			EXISTING CONDITIONS									
	Area Description	**Usage**	**No. of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/Space**	**Exist Control**	**Annual Hours**	**Retrofit Control**	**Annual kWh**	
20	40 Closet 2	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	SW	32	
79	Auditorium	Auditorium	56	SP I 100	I100/1	100	5.60	SW	1000	SW	5,600	
133	Auditorium	Auditorium	1	CF 26	CFQ26/1-L	27	0.03	SW	1000	SW	27	
8	Stage	Storage Areas	2	MH 175	MH175/1	215	0.43	SW	1000	SW	430	
79	Stage	Storage Areas	2	SP I 100	I100/1	100	0.20	SW	1000	SW	200	
108	Stage Closet	Storage Areas	1	I 65	I65/1	65	0.07	SW	1000	SW	65	
15	H Hall Boy's Bathroom	Bath Room	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2000	SW	120	
15	H Hall Girl's Bathroom	Bath Room	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2000	SW	120	
108	H Hall Closet	Storage Areas	1	I 65	I65/1	65	0.07	SW	1000	SW	65	
245	Team Room T1	Classrooms	5	T 32 R F 3 (ELE)	F43LE	110	0.55	SW	2400	C-OCC	1,320	
245	Team Room T1	Classrooms	6	T 32 R F 3 (ELE)	F43LE	110	0.66	SW	2400	C-OCC	1,584	
245	Team Room T1	Classrooms	5	T 32 R F 3 (ELE)	F43LE	110	0.55	SW	2400	C-OCC	1,320	
245	Team Room T2	Classrooms	5	T 32 R F 3 (ELE)	F43LE	110	0.55	SW	2400	C-OCC	1,320	
245	Team Room T2	Classrooms	6	T 32 R F 3 (ELE)	F43LE	110	0.66	SW	2400	C-OCC	1,584	
245	Team Room T2	Classrooms	5	T 32 R F 3 (ELE)	F43LE	110	0.55	SW	2400	C-OCC	1,320	
245	Team Room T3	Classrooms	5	T 32 R F 3 (ELE)	F43LE	110	0.55	SW	2400	C-OCC	1,320	
245	Team Room T3	Classrooms	6	T 32 R F 3 (ELE)	F43LE	110	0.66	SW	2400	C-OCC	1,584	
245	Team Room T3	Classrooms	5	T 32 R F 3 (ELE)	F43LE	110	0.55	SW	2400	C-OCC	1,320	
245	Team Room T4	Classrooms	5	T 32 R F 3 (ELE)	F43LE	110	0.55	SW	2400	C-OCC	1,320	
245	Team Room T4	Classrooms	6	T 32 R F 3 (ELE)	F43LE	110	0.66	SW	2400	C-OCC	1,584	
245	Team Room T4	Classrooms	5	T 32 R F 3 (ELE)	F43LE	110	0.55	SW	2400	C-OCC	1,320	
1	Team Room	Classrooms	14	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.43	SW	2400	C-OCC	1,042	
245	N. Team Room Aux Room	Classrooms	3	T 32 R F 3 (ELE)	F43LE	110	0.33	SW	2400	C-OCC	792	
245	S. Team Room Aux Room	Classrooms	3	T 32 R F 3 (ELE)	F43LE	110	0.33	SW	2400	C-OCC	792	
254	41	Classrooms	14	T 32 R F 4 (ELE)	F44LL	118	1.65	SW	2400	C-OCC	3,965	
254	41/42 Office	Offices	2	T 32 R F 4 (ELE)	F44LL	118	0.24	SW	2400	C-OCC	566	
254	42	Classrooms	15	T 32 R F 4 (ELE)	F44LL	118	1.77	SW	2400	C-OCC	4,248	
245	42 Closet 1	Storage Areas	1	T 32 R F 3 (ELE)	F43LE	110	0.11	SW	1000	SW	110	
245	42 Closet 2	Storage Areas	1	T 32 R F 3 (ELE)	F43LE	110	0.11	SW	1000	SW	110	
254	43	Classrooms	28	T 32 R F 4 (ELE)	F44LL	118	3.30	SW	2400	C-OCC	7,930	
15	M Hall Closet 1	Storage Areas	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	1000	SW	180	
15	M Hall Closet 2	Storage Areas	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	1000	SW	180	
15	M Hall Closet 3	Storage Areas	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	1000	SW	180	
15	M Hall Closet 4	Storage Areas	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	1000	SW	180	
15	Main Entrance Lobby	Hallways	12	S 32 C F 2 (ELE)	F42LL	60	0.72	SW	2280	SW	1,642	
20	A Hallway	Hallways	19	S 32 C F 1 (ELE)	F41LL	32	0.61	SW	2280	SW	1,386	
15	A Hallway	Hallways	13	S 32 C F 2 (ELE)	F42LL	60	0.78	SW	2280	SW	1,778	
20	B Hallway	Hallways	35	S 32 C F 1 (ELE)	F41LL	32	1.12	SW	2280	SW	2,554	
20	C Hallway	Hallways	35	S 32 C F 1 (ELE)	F41LL	32	1.12	SW	2280	SW	2,554	
20	D Hallway	Hallways	35	S 32 C F 1 (ELE)	F41LL	32	1.12	SW	2280	SW	2,554	
4	E Hallway	Hallways	2	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.14	SW	2280	SW	328	
1	E Hallway	Hallways	22	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.68	SW	2280	SW	1,555	
4	E Hallway	Hallways	6	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.43	SW	2280	SW	985	
20	F Hallway	Hallways	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2280	SW	365	
20	G Hallway	Hallways	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2280	SW	438	
15	H Hallway	Hallways	10	S 32 C F 2 (ELE)	F42LL	60	0.60	SW	2280	SW	1,368	
15	M hallway	Hallways	8	S 32 C F 2 (ELE)	F42LL	60	0.48	SW	2280	SW	1,094	
15	M hallway	Hallways	5	S 32 C F 2 (ELE)	F42LL	60	0.30	SW	2280	SW	684	
5	Team Room Lobby	Hallways	9	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.54	SW	2280	SW	1,231	
68	Exterior	Outdoor Lighting	22	175 MH WALL	MH175/1	215	4.73	SW	4368	SW	20,661	
37	Exterior	Outdoor Lighting	2	SP 26 R CF 2	CFQ26/2-L	50	0.10	SW	4368	SW	437	
79	Exterior	Outdoor Lighting	3	SP I 100	I100/1	100	0.30	SW	4368	SW	1,310	
	Total		**1,732**				**104**				**236,253**	

Energy Audit of Eisenhower Middle School

CHA Project No.24454 **Cost of Electricity:** **$0.107 $/kWh**

ECM-1 Lighting Replacements **$6.74 $/kW**

	EXISTING CONDITIONS									RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
20	Main Office Common	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	438	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2280	437.76	0.00	0.00	$ -	$ -	$ -		
20	Main Office Common	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	438	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2280	437.76	0.00	0.00	$ -	$ -	$ -		
20	Main Office Common	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2280	146	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2280	145.92	0.00	0.00	$ -	$ -	$ -		
20	Main Office Common	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2280	73	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	2280	72.96	0.00	0.00	$ -	$ -	$ -		
20	Main Office Common	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2280	73	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	2280	72.96	0.00	0.00	$ -	$ -	$ -		
11	Main Office	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	173	1	C 28 P F 2	F42SSILL	48	0.048	SW	2400	115.2	57.60	0.02	$ 8.10	$ 106.25	$ 10.00	13.1	1.7
20	Main Office	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307	4	S 32 C F 1 (ELE)	F41LL	32	0.128	SW	2400	307.2	0.00	0.00	$ -	$ -	$ -		
20	Main Office	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	154	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2400	153.6	0.00	0.00	$ -	$ -	$ -		
20	Main Office	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307	4	S 32 C F 1 (ELE)	F41LL	32	0.128	SW	2400	307.2	0.00	0.00	$ -	$ -	$ -		
20	Main Office	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	154	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2400	153.6	0.00	0.00	$ -	$ -	$ -		
20	Main Office	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307	4	S 32 C F 1 (ELE)	F41LL	32	0.128	SW	2400	307.2	0.00	0.00	$ -	$ -	$ -		
20	Main Office	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	154	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2400	153.6	0.00	0.00	$ -	$ -	$ -		
20	Main Office	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307	4	S 32 C F 1 (ELE)	F41LL	32	0.128	SW	2400	307.2	0.00	0.00	$ -	$ -	$ -		
20	Guidance Common	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	438	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2280	437.76	0.00	0.00	$ -	$ -	$ -		
20	Guidance	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	154	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2400	153.6	0.00	0.00	$ -	$ -	$ -		
20	Guidance	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	154	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2400	153.6	0.00	0.00	$ -	$ -	$ -		
20	Guidance	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	154	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2400	153.6	0.00	0.00	$ -	$ -	$ -		
20	Faculty Room	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	230	3	S 32 C F 1 (ELE)	F41LL	32	0.096	SW	2400	230.4	0.00	0.00	$ -	$ -	$ -		
20	Faculty Room	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	230	3	S 32 C F 1 (ELE)	F41LL	32	0.096	SW	2400	230.4	0.00	0.00	$ -	$ -	$ -		
20	Faculty Room	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	230	3	S 32 C F 1 (ELE)	F41LL	32	0.096	SW	2400	230.4	0.00	0.00	$ -	$ -	$ -		
20	Faculty Room	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2400	77	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	2400	76.8	0.00	0.00	$ -	$ -	$ -		
20	B Hall Men's Bathroom	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2000	64	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	2000	64	0.00	0.00	$ -	$ -	$ -		
20	B Hall Women's Bathroom	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2000	64	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	2000	64	0.00	0.00	$ -	$ -	$ -		
20	B Hall Closet 1	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
108	B Hall Closet 2	2	I 65	I65/1	65	0.1	SW	1000	130	2	CF 26	CFQ26/1-L	27	0.054	SW	1000	54	76.00	0.08	$ 14.28	$ 40.50	$ -	2.8	0.5
133	B Hall Closet 2	1	CF 26	CFQ26/1-L	27	0.0	SW	1000	27	1	CF 26	CFQ26/1-L	27	0.027	SW	1000	27	0.00	0.00	$ -	$ -	$ -		
20	B Hall Office 1	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307	4	S 32 C F 1 (ELE)	F41LL	32	0.128	SW	2400	307.2	0.00	0.00	$ -	$ -	$ -		
20	Nurse	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2400	460.8	0.00	0.00	$ -	$ -	$ -		
20	Nurse	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2400	77	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	2400	76.8	0.00	0.00	$ -	$ -	$ -		
15	Nurse Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2000	120	0.00	0.00	$ -	$ -	$ -		
20	Nurse Closet	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	1000	64	0.00	0.00	$ -	$ -	$ -		
20	B Hall Office 2	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307	4	S 32 C F 1 (ELE)	F41LL	32	0.128	SW	2400	307.2	0.00	0.00	$ -	$ -	$ -		
20	1	18	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2400	1,382	18	S 32 C F 1 (ELE)	F41LL	32	0.576	SW	2400	1382.4	0.00	0.00	$ -	$ -	$ -		
15	1	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	1	9	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	691	9	S 32 C F 1 (ELE)	F41LL	32	0.288	SW	2400	691.2	0.00	0.00	$ -	$ -	$ -		
15	1	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	B Hall Small Classroom	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2400	460.8	0.00	0.00	$ -	$ -	$ -		
20	2	16	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,229	16	S 32 C F 1 (ELE)	F41LL	32	0.512	SW	2400	1228.8	0.00	0.00	$ -	$ -	$ -		
15	2	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	2	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	614	8	S 32 C F 1 (ELE)	F41LL	32	0.256	SW	2400	614.4	0.00	0.00	$ -	$ -	$ -		
15	2	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	3	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	SW	2400	921.6	0.00	0.00	$ -	$ -	$ -		
15	3	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	3	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2400	460.8	0.00	0.00	$ -	$ -	$ -		
15	3	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	4	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	SW	2400	921.6	0.00	0.00	$ -	$ -	$ -		
15	4	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	4	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2400	460.8	0.00	0.00	$ -	$ -	$ -		
15	4	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	B Hall Boy's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2000	128	0.00	0.00	$ -	$ -	$ -		
20	B Hall Girl's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2000	128	0.00	0.00	$ -	$ -	$ -		
20	Media Center	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075	14	S 32 C F 1 (ELE)	F41LL	32	0.448	SW	2400	1075.2	0.00	0.00	$ -	$ -	$ -		
20	Media Center	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075	14	S 32 C F 1 (ELE)	F41LL	32	0.448	SW	2400	1075.2	0.00	0.00	$ -	$ -	$ -		
20	Media Center	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075	14	S 32 C F 1 (ELE)	F41LL	32	0.448	SW	2400	1075.2	0.00	0.00	$ -	$ -	$ -		
20	Media Center	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075	14	S 32 C F 1 (ELE)	F41LL	32	0.448	SW	2400	1075.2	0.00	0.00	$ -	$ -	$ -		
20	Media Center	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075	14	S 32 C F 1 (ELE)	F41LL	32	0.448	SW	2400	1075.2	0.00	0.00	$ -	$ -	$ -		
20	5	16	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,229	16	S 32 C F 1 (ELE)	F41LL	32	0.512	SW	2400	1228.8	0.00	0.00	$ -	$ -	$ -		
15	5	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	5	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	614	8	S 32 C F 1 (ELE)	F41LL	32	0.256	SW	2400	614.4	0.00	0.00	$ -	$ -	$ -		
15	5	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	6	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	SW	2400	921.6	0.00	0.00	$ -	$ -	$ -		
15	6	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	6	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2400	460.8	0.00	0.00	$ -	$ -	$ -		
15	6	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	7	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075	14	S 32 C F 1 (ELE)	F41LL	32	0.448	SW	2400	1075.2	0.00	0.00	$ -	$ -	$ -		
15	7	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	7	7	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	538	7	S 32 C F 1 (ELE)	F41LL	32	0.224	SW	2400	537.6	0.00	0.00	$ -	$ -	$ -		
15	7	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	8	20	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2400	1,536	20	S 32 C F 1 (ELE)	F41LL	32	0.64	SW	2400	1536	0.00	0.00	$ -	$ -	$ -		
15	8	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	8	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	2400	768	0.00	0.00	$ -	$ -	$ -		
15	8	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	8 Storage	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	1000	64	0.00	0.00	$ -	$ -	$ -		
20	9	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	SW	2400	921.6	0.00	0.00	$ -	$ -	$ -		
15	9	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	9	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2400	460.8	0.00	0.00	$ -	$ -	$ -		
15	9	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	10	16	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,229	16	S 32 C F 1 (ELE)	F41LL	32	0.512	SW	2400	1228.8	0.00	0.00	$ -	$ -	$ -		
15	10	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	10	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	614	8	S 32 C F 1 (ELE)	F41LL	32	0.256	SW	2400	614.4	0.00	0.00	$ -	$ -	$ -		
15	10	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	10 Storage	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	1000	64	0.00	0.00	$ -	$ -	$ -		
15	10A	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	576	4	S 32 C F 2 (ELE)	F42LL	60	0.24	SW	2400	576	0.00	0.00	$ -	$ -	$ -		
20	11	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	SW	2400	921.6	0.00	0.00	$ -	$ -	$ -		
15	11	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	11	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2400	460.8	0.00	0.00	$ -	$ -	$ -		
15	11	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	12	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	SW	2400	921.6	0.00	0.00	$ -	$ -	$ -		
15	12	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	12	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2400	460.8	0.00	0.00	$ -	$ -	$ -		
15	12	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	13	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	SW	2400	921.6	0.00	0.00	$ -	$ -	$ -		
15	13	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		

Energy Audit of Eisenhower Middle School

CHA Project No.24454

ECM-1 Lighting Replacements

Cost of Electricity: **$0.107 $/kWh**

$6.74 $/kW

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
20	13	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2400	460.8	0.00	0.00	$ -	$ -	$ -		
15	13	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	14	16	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,229	16	S 32 C F 1 (ELE)	F41LL	32	0.512	SW	2400	1228.8	0.00	0.00	$ -	$ -	$ -		
15	14	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	432	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	2400	432	0.00	0.00	$ -	$ -	$ -		
20	14	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	614	8	S 32 C F 1 (ELE)	F41LL	32	0.256	SW	2400	614.4	0.00	0.00	$ -	$ -	$ -		
15	14	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	432	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	2400	432	0.00	0.00	$ -	$ -	$ -		
245	15	18	T 32 R F 3 (ELE)	F43LE	110	2.0	SW	2400	4,752	18	T 32 R F 3 (ELE)	F43LE	110	1.98	SW	2400	4752	0.00	0.00	$ -	$ -	$ -		
245	15 Storage 1	2	T 32 R F 3 (ELE)	F43LE	110	0.2	SW	1000	220	2	T 32 R F 3 (ELE)	F43LE	110	0.22	SW	1000	220	0.00	0.00	$ -	$ -	$ -		
245	15 Storage 2	2	T 32 R F 3 (ELE)	F43LE	110	0.2	SW	1000	220	2	T 32 R F 3 (ELE)	F43LE	110	0.22	SW	1000	220	0.00	0.00	$ -	$ -	$ -		
245	16	12	T 32 R F 3 (ELE)	F43LE	110	1.3	SW	2400	3,168	12	T 32 R F 3 (ELE)	F43LE	110	1.32	SW	2400	3168	0.00	0.00	$ -	$ -	$ -		
245	17	12	T 32 R F 3 (ELE)	F43LE	110	1.3	SW	2400	3,168	12	T 32 R F 3 (ELE)	F43LE	110	1.32	SW	2400	3168	0.00	0.00	$ -	$ -	$ -		
245	18	12	T 32 R F 3 (ELE)	F43LE	110	1.3	SW	2400	3,168	12	T 32 R F 3 (ELE)	F43LE	110	1.32	SW	2400	3168	0.00	0.00	$ -	$ -	$ -		
245	19	12	T 32 R F 3 (ELE)	F43LE	110	1.3	SW	2400	3,168	12	T 32 R F 3 (ELE)	F43LE	110	1.32	SW	2400	3168	0.00	0.00	$ -	$ -	$ -		
15	20	12	S 32 C F 2 (ELE)	F42LL	60	0.7	SW	2400	1,728	12	S 32 C F 2 (ELE)	F42LL	60	0.72	SW	2400	1728	0.00	0.00	$ -	$ -	$ -		
20	21	16	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,229	16	S 32 C F 1 (ELE)	F41LL	32	0.512	SW	2400	1228.8	0.00	0.00	$ -	$ -	$ -		
15	21	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	21	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	614	8	S 32 C F 1 (ELE)	F41LL	32	0.256	SW	2400	614.4	0.00	0.00	$ -	$ -	$ -		
15	21	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
15	22	12	S 32 C F 2 (ELE)	F42LL	60	0.7	SW	2400	1,728	12	S 32 C F 2 (ELE)	F42LL	60	0.72	SW	2400	1728	0.00	0.00	$ -	$ -	$ -		
20	23	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075	14	S 32 C F 1 (ELE)	F41LL	32	0.448	SW	2400	1075.2	0.00	0.00	$ -	$ -	$ -		
15	23	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	23	7	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	538	7	S 32 C F 1 (ELE)	F41LL	32	0.224	SW	2400	537.6	0.00	0.00	$ -	$ -	$ -		
15	23	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
15	24	9	S 32 C F 2 (ELE)	F42LL	60	0.5	SW	2400	1,296	9	S 32 C F 2 (ELE)	F42LL	60	0.54	SW	2400	1296	0.00	0.00	$ -	$ -	$ -		
20	25	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	2400	768	0.00	0.00	$ -	$ -	$ -		
15	25	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	25	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	25	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
15	26	9	S 32 C F 2 (ELE)	F42LL	60	0.5	SW	2400	1,296	9	S 32 C F 2 (ELE)	F42LL	60	0.54	SW	2400	1296	0.00	0.00	$ -	$ -	$ -		
20	27	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	2400	768	0.00	0.00	$ -	$ -	$ -		
15	27	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	27	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	27	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	28	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	SW	2400	921.6	0.00	0.00	$ -	$ -	$ -		
15	28	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	28	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2400	460.8	0.00	0.00	$ -	$ -	$ -		
15	28	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	D Hall Closet 1	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
15	D Hall Closet 2	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	60	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	1000	60	0.00	0.00	$ -	$ -	$ -		
11	D Hall Closet 3	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.048	SW	1000	48	24.00	0.02	$ 4.51	$ 106.25	$ 10.00	23.6	4.0
20	D Hall Closet 3	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	1000	64	0.00	0.00	$ -	$ -	$ -		
20	D Hall Closet 4	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	128	4	S 32 C F 1 (ELE)	F41LL	32	0.128	SW	1000	128	0.00	0.00	$ -	$ -	$ -		
20	A Hall Boy's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2000	128	0.00	0.00	$ -	$ -	$ -		
20	A Hall Girl's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2000	128	0.00	0.00	$ -	$ -	$ -		
20	29/30	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	2400	768	0.00	0.00	$ -	$ -	$ -		
15	29/30	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2400	144	0.00	0.00	$ -	$ -	$ -		
20	29/30	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	29/30	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2400	144	0.00	0.00	$ -	$ -	$ -		
20	29/30	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	2400	768	0.00	0.00	$ -	$ -	$ -		
15	29/30	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2400	144	0.00	0.00	$ -	$ -	$ -		
20	29/30	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	29/30	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2400	144	0.00	0.00	$ -	$ -	$ -		
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563	11	S 32 C F 1 (ELE)	F41LL	32	0.352	SW	1600	563.2	0.00	0.00	$ -	$ -	$ -		
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563	11	S 32 C F 1 (ELE)	F41LL	32	0.352	SW	1600	563.2	0.00	0.00	$ -	$ -	$ -		
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563	11	S 32 C F 1 (ELE)	F41LL	32	0.352	SW	1600	563.2	0.00	0.00	$ -	$ -	$ -		
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563	11	S 32 C F 1 (ELE)	F41LL	32	0.352	SW	1600	563.2	0.00	0.00	$ -	$ -	$ -		
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563	11	S 32 C F 1 (ELE)	F41LL	32	0.352	SW	1600	563.2	0.00	0.00	$ -	$ -	$ -		
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563	11	S 32 C F 1 (ELE)	F41LL	32	0.352	SW	1600	563.2	0.00	0.00	$ -	$ -	$ -		
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563	11	S 32 C F 1 (ELE)	F41LL	32	0.352	SW	1600	563.2	0.00	0.00	$ -	$ -	$ -		
20	Kitchen	35	S 32 C F 1 (ELE)	F41LL	32	1.1	SW	1600	1,792	35	S 32 C F 1 (ELE)	F41LL	32	1.12	SW	1600	1792	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Storage Large	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	1000	192	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	1000	192	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Office	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	154	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2400	153.6	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Storage A	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	1000	64	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Storage B	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Storage C	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Storage D	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Storage E	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Storage F	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
146	Gym	14	High Bay MH 400	MH400/1	458	6.4	SW	2000	12,824	14	P 54 C F 4	FC20	20	0.28	SW	2000	560	12264.00	6.13	$ 1,808.20	$ 4,200.00	$ 1,400.00	2.3	0.2
146	Gym	14	High Bay MH 400	MH400/1	458	6.4	SW	2000	12,824	14	P 54 C F 4	FC20	20	0.28	SW	2000	560	12264.00	6.13	$ 1,808.20	$ 4,200.00	$ 1,400.00	2.3	0.2
20	Gym Office	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307	4	S 32 C F 1 (ELE)	F41LL	32	0.128	SW	2400	307.2	0.00	0.00	$ -	$ -	$ -		
20	Gym Area Mechanical 1	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	128	4	S 32 C F 1 (ELE)	F41LL	32	0.128	SW	1000	128	0.00	0.00	$ -	$ -	$ -		
20	Gym Area Mechanical 2	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	1000	64	0.00	0.00	$ -	$ -	$ -		
20	Boy's Locker Room	19	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2800	1,702	19	S 32 C F 1 (ELE)	F41LL	32	0.608	SW	2800	1702.4	0.00	0.00	$ -	$ -	$ -		
20	Boy's Locker Room	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2800	269	3	S 32 C F 1 (ELE)	F41LL	32	0.096	SW	2800	268.8	0.00	0.00	$ -	$ -	$ -		
15	Boy's Locker Room	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2800	504	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	2800	504	0.00	0.00	$ -	$ -	$ -		
15	Boy's Locker Room	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2800	168	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2800	168	0.00	0.00	$ -	$ -	$ -		
5	Boy's Locker Room	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	SW	2800	168	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.06	SW	2800	168	0.00	0.00	$ -	$ -	$ -		
108	Boy's Locker Room	2	I 65	I65/1	65	0.1	SW	2800	364	2	CF 26	CFQ26/1-L	27	0.054	SW	2800	151.2	212.80	0.08	$ 28.92	$ 40.50	$ -	1.4	0.2
20	Girl's Locker Room	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2800	717	8	S 32 C F 1 (ELE)	F41LL	32	0.256	SW	2800	716.8	0.00	0.00	$ -	$ -	$ -		
20	Girl's Locker Room	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2800	717	8	S 32 C F 1 (ELE)	F41LL	32	0.256	SW	2800	716.8	0.00	0.00	$ -	$ -	$ -		
20	Girl's Locker Room	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2800	358	4	S 32 C F 1 (ELE)	F41LL	32	0.128	SW	2800	358.4	0.00	0.00	$ -	$ -	$ -		
20	Girl's Locker Room	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2800	179	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2800	179.2	0.00	0.00	$ -	$ -	$ -		
15	Girl's Locker Room	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2800	168	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2800	168	0.00	0.00	$ -	$ -	$ -		
15	Girl's Locker Room	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2800	168	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2800	168	0.00	0.00	$ -	$ -	$ -		
11	Girl's Locker Room	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2800	403	2	C 28 P F 2	F42SSILL	48	0.096	SW	2800	268.8	134.40	0.05	$ 18.26	$ 212.50	$ 20.00	11.6	1.4
191	Girl's Locker Room	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.1	SW	2800	344	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.123	SW	2800	344.4	0.00	0.00	$ -	$ -	$ -		
191	Girl's Locker Room	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.1	SW	2800	344	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.123	SW	2800	344.4	0.00	0.00	$ -	$ -	$ -		
20	Gym Front Storage Room	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	1000	256	8	S 32 C F 1 (ELE)	F41LL	32	0.256	SW	1000	256	0.00	0.00	$ -	$ -	$ -		
20	Gym Back Storage Room	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	1000	192	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	1000	192	0.00	0.00	$ -	$ -	$ -		
15	31	9	S 32 C F 2 (ELE)	F42LL	60	0.5	SW	2400	1,296	9	S 32 C F 2 (ELE)	F42LL	60	0.54	SW	2400	1296	0.00	0.00	$ -	$ -	$ -		
15	31	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2400	1,440	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2400	1440	0.00	0.00	$ -	$ -	$ -		
15	31	9	S 32 C F 2 (ELE)	F42LL	60	0.5	SW	2400	1,296	9	S 32 C F 2 (ELE)	F42LL	60	0.54	SW	2400	1296	0.00	0.00	$ -	$ -	$ -		

Energy Audit of Eisenhower Middle School

CHA Project No.24454

ECM-1 Lighting Replacements

Cost of Electricity: **$0.107 $/kWh**

$6.74 $/kW

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
15	31 Storage	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	1000	120	0.00	0.00	$ -	$ -	$ -		
15	31/33 Shared Room	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	1000	120	0.00	0.00	$ -	$ -	$ -		
15	31A	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2400	1,440	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2400	1440	0.00	0.00	$ -	$ -	$ -		
1	31A	2	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.1	SW	2400	149	2	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.062	SW	2400	148.8	0.00	0.00	$ -	$ -	$ -		
20	32	18	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2400	1,382	18	S 32 C F 1 (ELE)	F41LL	32	0.576	SW	2400	1382.4	0.00	0.00	$ -	$ -	$ -		
15	32	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	32	9	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	691	9	S 32 C F 1 (ELE)	F41LL	32	0.288	SW	2400	691.2	0.00	0.00	$ -	$ -	$ -		
15	32	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
254	33	12	T 32 R F 4 (ELE)	F44LL	118	1.4	SW	2400	3,398	12	T 32 R F 4 (ELE)	F44LL	118	1.416	SW	2400	3398.4	0.00	0.00	$ -	$ -	$ -		
245	33	3	T 32 R F 3 (ELE)	F43LE	110	0.3	SW	2400	792	3	T 32 R F 3 (ELE)	F43LE	110	0.33	SW	2400	792	0.00	0.00	$ -	$ -	$ -		
213	34	11	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.0	SW	2400	2,376	11	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.99	SW	2400	2376	0.00	0.00	$ -	$ -	$ -		
20	35	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	SW	2400	921.6	0.00	0.00	$ -	$ -	$ -		
15	35	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	35	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2400	460.8	0.00	0.00	$ -	$ -	$ -		
15	35	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
213	36	8	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.7	SW	2400	1,728	8	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.72	SW	2400	1728	0.00	0.00	$ -	$ -	$ -		
213	37	12	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.1	SW	2400	2,592	12	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.08	SW	2400	2592	0.00	0.00	$ -	$ -	$ -		
20	37 Closet	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
20	38	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	SW	2400	921.6	0.00	0.00	$ -	$ -	$ -		
15	38	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	38	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2400	460.8	0.00	0.00	$ -	$ -	$ -		
15	38	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	39	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	2400	768	0.00	0.00	$ -	$ -	$ -		
15	39	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2400	144	0.00	0.00	$ -	$ -	$ -		
20	39	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	39	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2400	144	0.00	0.00	$ -	$ -	$ -		
20	39	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	2400	768	0.00	0.00	$ -	$ -	$ -		
15	39	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2400	144	0.00	0.00	$ -	$ -	$ -		
20	39	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	39	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2400	144	0.00	0.00	$ -	$ -	$ -		
20	40	16	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,229	16	S 32 C F 1 (ELE)	F41LL	32	0.512	SW	2400	1228.8	0.00	0.00	$ -	$ -	$ -		
15	40	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
15	40	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	40 Closet 1	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
20	40 Closet 2	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
79	Auditorium	56	SP I 100	I100/1	100	5.6	SW	1000	5,600	56	CF 26	CFQ26/1-L	27	1.512	SW	1000	1512	4088.00	4.09	$ 768.05	$ 1,134.00	$ -	1.5	0.3
133	Auditorium	1	CF 26	CFQ26/1-L	27	0.0	SW	1000	27	1	CF 26	CFQ26/1-L	27	0.027	SW	1000	27	0.00	0.00	$ -	$ -	$ -		
8	Stage	2	MH 175	MH175/1	215	0.4	SW	1000	430	2	MH 175	MH175/1	215	0.43	SW	1000	430	0.00	0.00	$ -	$ -	$ -		
79	Stage	2	SP I 100	I100/1	100	0.2	SW	1000	200	2	CF 26	CFQ26/1-L	27	0.054	SW	1000	54	146.00	0.15	$ 27.43	$ 40.50	$ -	1.5	0.3
108	Stage Closet	1	I 65	I65/1	65	0.1	SW	1000	65	1	CF 26	CFQ26/1-L	27	0.027	SW	1000	27	38.00	0.04	$ 7.14	$ 20.25	$ -	2.8	0.5
15	H Hall Boy's Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2000	120	0.00	0.00	$ -	$ -	$ -		
15	H Hall Girl's Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2000	120	0.00	0.00	$ -	$ -	$ -		
108	H Hall Closet	1	I 65	I65/1	65	0.1	SW	1000	65	1	CF 26	CFQ26/1-L	27	0.027	SW	1000	27	38.00	0.04	$ 7.14	$ 20.25	$ -	2.8	0.5
245	Team Room T1	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320	5	T 32 R F 3 (ELE)	F43LE	110	0.55	SW	2400	1320	0.00	0.00	$ -	$ -	$ -		
245	Team Room T1	6	T 32 R F 3 (ELE)	F43LE	110	0.7	SW	2400	1,584	6	T 32 R F 3 (ELE)	F43LE	110	0.66	SW	2400	1584	0.00	0.00	$ -	$ -	$ -		
245	Team Room T1	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320	5	T 32 R F 3 (ELE)	F43LE	110	0.55	SW	2400	1320	0.00	0.00	$ -	$ -	$ -		
245	Team Room T2	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320	5	T 32 R F 3 (ELE)	F43LE	110	0.55	SW	2400	1320	0.00	0.00	$ -	$ -	$ -		
245	Team Room T2	6	T 32 R F 3 (ELE)	F43LE	110	0.7	SW	2400	1,584	6	T 32 R F 3 (ELE)	F43LE	110	0.66	SW	2400	1584	0.00	0.00	$ -	$ -	$ -		
245	Team Room T2	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320	5	T 32 R F 3 (ELE)	F43LE	110	0.55	SW	2400	1320	0.00	0.00	$ -	$ -	$ -		
245	Team Room T3	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320	5	T 32 R F 3 (ELE)	F43LE	110	0.55	SW	2400	1320	0.00	0.00	$ -	$ -	$ -		
245	Team Room T3	6	T 32 R F 3 (ELE)	F43LE	110	0.7	SW	2400	1,584	6	T 32 R F 3 (ELE)	F43LE	110	0.66	SW	2400	1584	0.00	0.00	$ -	$ -	$ -		
245	Team Room T3	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320	5	T 32 R F 3 (ELE)	F43LE	110	0.55	SW	2400	1320	0.00	0.00	$ -	$ -	$ -		
245	Team Room T4	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320	5	T 32 R F 3 (ELE)	F43LE	110	0.55	SW	2400	1320	0.00	0.00	$ -	$ -	$ -		
245	Team Room T4	6	T 32 R F 3 (ELE)	F43LE	110	0.7	SW	2400	1,584	6	T 32 R F 3 (ELE)	F43LE	110	0.66	SW	2400	1584	0.00	0.00	$ -	$ -	$ -		
245	Team Room T4	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320	5	T 32 R F 3 (ELE)	F43LE	110	0.55	SW	2400	1320	0.00	0.00	$ -	$ -	$ -		
1	Team Room	14	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.4	SW	2400	1,042	14	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.434	SW	2400	1041.6	0.00	0.00	$ -	$ -	$ -		
245	N. Team Room Aux Room	3	T 32 R F 3 (ELE)	F43LE	110	0.3	SW	2400	792	3	T 32 R F 3 (ELE)	F43LE	110	0.33	SW	2400	792	0.00	0.00	$ -	$ -	$ -		
245	S. Team Room Aux Room	3	T 32 R F 3 (ELE)	F43LE	110	0.3	SW	2400	792	3	T 32 R F 3 (ELE)	F43LE	110	0.33	SW	2400	792	0.00	0.00	$ -	$ -	$ -		
254	41	14	T 32 R F 4 (ELE)	F44LL	118	1.7	SW	2400	3,965	14	T 32 R F 4 (ELE)	F44LL	118	1.652	SW	2400	3964.8	0.00	0.00	$ -	$ -	$ -		
254	41/42 Office	2	T 32 R F 4 (ELE)	F44LL	118	0.2	SW	2400	566	2	T 32 R F 4 (ELE)	F44LL	118	0.236	SW	2400	566.4	0.00	0.00	$ -	$ -	$ -		
254	42	15	T 32 R F 4 (ELE)	F44LL	118	1.8	SW	2400	4,248	15	T 32 R F 4 (ELE)	F44LL	118	1.77	SW	2400	4248	0.00	0.00	$ -	$ -	$ -		
245	42 Closet 1	1	T 32 R F 3 (ELE)	F43LE	110	0.1	SW	1000	110	1	T 32 R F 3 (ELE)	F43LE	110	0.11	SW	1000	110	0.00	0.00	$ -	$ -	$ -		
245	42 Closet 2	1	T 32 R F 3 (ELE)	F43LE	110	0.1	SW	1000	110	1	T 32 R F 3 (ELE)	F43LE	110	0.11	SW	1000	110	0.00	0.00	$ -	$ -	$ -		
254	43	28	T 32 R F 4 (ELE)	F44LL	118	3.3	SW	2400	7,930	28	T 32 R F 4 (ELE)	F44LL	118	3.304	SW	2400	7929.6	0.00	0.00	$ -	$ -	$ -		
15	M Hall Closet 1	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	180	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	1000	180	0.00	0.00	$ -	$ -	$ -		
15	M Hall Closet 2	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	180	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	1000	180	0.00	0.00	$ -	$ -	$ -		
15	M Hall Closet 3	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	180	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	1000	180	0.00	0.00	$ -	$ -	$ -		
15	M Hall Closet 4	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	180	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	1000	180	0.00	0.00	$ -	$ -	$ -		
15	Main Entrance Lobby	12	S 32 C F 2 (ELE)	F42LL	60	0.7	SW	2280	1,642	12	S 32 C F 2 (ELE)	F42LL	60	0.72	SW	2280	1641.6	0.00	0.00	$ -	$ -	$ -		
20	A Hallway	19	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2280	1,386	19	S 32 C F 1 (ELE)	F41LL	32	0.608	SW	2280	1386.24	0.00	0.00	$ -	$ -	$ -		
15	A Hallway	13	S 32 C F 2 (ELE)	F42LL	60	0.8	SW	2280	1,778	13	S 32 C F 2 (ELE)	F42LL	60	0.78	SW	2280	1778.4	0.00	0.00	$ -	$ -	$ -		
20	B Hallway	35	S 32 C F 1 (ELE)	F41LL	32	1.1	SW	2280	2,554	35	S 32 C F 1 (ELE)	F41LL	32	1.12	SW	2280	2553.6	0.00	0.00	$ -	$ -	$ -		
20	C Hallway	35	S 32 C F 1 (ELE)	F41LL	32	1.1	SW	2280	2,554	35	S 32 C F 1 (ELE)	F41LL	32	1.12	SW	2280	2553.6	0.00	0.00	$ -	$ -	$ -		
20	D Hallway	35	S 32 C F 1 (ELE)	F41LL	32	1.1	SW	2280	2,554	35	S 32 C F 1 (ELE)	F41LL	32	1.12	SW	2280	2553.6	0.00	0.00	$ -	$ -	$ -		
4	E Hallway	2	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	SW	2280	328	2	2T 17 R F 2 (ELE)	F22ILL	33	0.066	SW	2280	150.48	177.84	0.08	$ 25.34	$ 202.50	$ 20.00	8.0	1.0
1	E Hallway	22	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.7	SW	2280	1,555	22	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.682	SW	2280	1554.96	0.00	0.00	$ -	$ -	$ -		
4	E Hallway	6	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.4	SW	2280	985	6	2T 17 R F 2 (ELE)	F22ILL	33	0.198	SW	2280	451.44	533.52	0.23	$ 76.01	$ 607.50	$ 60.00	8.0	1.0
20	F Hallway	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	365	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2280	364.8	0.00	0.00	$ -	$ -	$ -		
20	G Hallway	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	438	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2280	437.76	0.00	0.00	$ -	$ -	$ -		
15	H Hallway	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2280	1,368	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2280	1368	0.00	0.00	$ -	$ -	$ -		
15	M hallway	8	S 32 C F 2 (ELE)	F42LL	60	0.5	SW	2280	1,094	8	S 32 C F 2 (ELE)	F42LL	60	0.48	SW	2280	1094.4	0.00	0.00	$ -	$ -	$ -		
15	M hallway	5	S 32 C F 2 (ELE)	F42LL	60	0.3	SW	2280	684	5	S 32 C F 2 (ELE)	F42LL	60	0.3	SW	2280	684	0.00	0.00	$ -	$ -	$ -		
5	Team Room Lobby	9	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.5	SW	2280	1,231	9	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.54	SW	2280	1231.2	0.00	0.00	$ -	$ -	$ -		
68	Exterior	22	175 MH WALL	MH175/1	215	4.7	SW	4368	20,661	22	175 MH WALL	MH175/1	215	4.73	SW	4368	20660.64	0.00	0.00	$ -	$ -	$ -		
37	Exterior	2	SP 26 R CF 2	CFQ26/2-L	50	0.1	SW	4368	437	2	SP 26 R CF 2	CFQ26/2-L	50	0.1	SW	4368	436.8	0.00	0.00	$ -	$ -	$ -		
79	Exterior	3	SP I 100	I100/1	100	0.3	SW	4368	1,310	3	CF 26	CFQ26/1-L	27	0.081	SW	4368	353.808	956.59	0.22	$ 120.07	$ 60.75	$ -	0.5	0.1
	Total	**1,732**				**104**			**236,253**	**1,732**			**14,076**	**86**			**205242.448**	**31,011**	**17**	**$ 4,721.66**	**$ 10,991.75**	**$ 2,920.00**		
																	Demand Savings		**17.4**	**$ 1,403.51**				
																	kWh Savings		**31,011**	**$ 3,318.15**				
																	Total savings			**$ 4,721.66**		**2.3**	**1.7**

Energy Audit of Eisenhower Middle School

CHA Project No.24454 **Cost of Electricity:** **$0.107 $/kWh**

ECM-2 Install Occupancy Sensors **$6.74 $/kW**

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
20	Main Office Common	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	437.8	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	437.76	0.00	0.00	$ -	$ -	$ -		
20	Main Office Common	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	437.8	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	437.76	0.00	0.00	$ -	$ -	$ -		
20	Main Office Common	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2280	145.9	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2280	145.92	0.00	0.00	$ -	$ -	$ -		
20	Main Office Common	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2280	73.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2280	72.96	0.00	0.00	$ -	$ -	$ -		
20	Main Office Common	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2280	73.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2280	72.96	0.00	0.00	$ -	$ -	$ -		
11	Main Office	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	172.8	1	S 34 P F 2 (MAG)	F42EE	72	0.1	C-OCC	1200	86.4	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Main Office	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307.2	4	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1200	153.6	153.60	0.00	$ 16.44	$ 202.50	$ 35.00	12.3	10.2
20	Main Office	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	153.6	2	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1200	76.8	76.80	0.00	$ 8.22	$ 202.50	$ 35.00	24.6	20.4
20	Main Office	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307.2	4	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1200	153.6	153.60	0.00	$ 16.44	$ 202.50	$ 35.00	12.3	10.2
20	Main Office	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	153.6	2	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1200	76.8	76.80	0.00	$ 8.22	$ 202.50	$ 35.00	24.6	20.4
20	Main Office	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307.2	4	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1200	153.6	153.60	0.00	$ 16.44	$ 202.50	$ 35.00	12.3	10.2
20	Main Office	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	153.6	2	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1200	76.8	76.80	0.00	$ 8.22	$ 202.50	$ 35.00	24.6	20.4
20	Main Office	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307.2	4	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1200	153.6	153.60	0.00	$ 16.44	$ 202.50	$ 35.00	12.3	10.2
20	Guidance Common	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	437.8	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	437.76	0.00	0.00	$ -	$ -	$ -		
20	Guidance	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	153.6	2	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1200	76.8	76.80	0.00	$ 8.22	$ 202.50	$ 35.00	24.6	20.4
20	Guidance	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	153.6	2	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1200	76.8	76.80	0.00	$ 8.22	$ 202.50	$ 35.00	24.6	20.4
20	Guidance	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	153.6	2	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1200	76.8	76.80	0.00	$ 8.22	$ 202.50	$ 35.00	24.6	20.4
20	Faculty Room	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	230.4	3	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1200	115.2	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Faculty Room	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	230.4	3	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1200	115.2	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Faculty Room	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	230.4	3	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1200	115.2	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Faculty Room	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2400	76.8	1	S 32 C F 1 (ELE)	F41LL	32	0.0	C-OCC	1200	38.4	38.40	0.00	$ 4.11	$ 202.50	$ 35.00	49.3	40.8
20	B Hall Men's Bathroom	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2000	64.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2000	64	0.00	0.00	$ -	$ -	$ -		
20	B Hall Women's Bathroom	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2000	64.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2000	64	0.00	0.00	$ -	$ -	$ -		
20	B Hall Closet 1	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
108	B Hall Closet 2	2	I 65	I65/1	65	0.1	SW	1000	130.0	2	I 65	I65/1	65	0.1	SW	1000	130	0.00	0.00	$ -	$ -	$ -		
133	B Hall Closet 2	1	CF 26	CFQ26/1-L	27	0.0	SW	1000	27.0	1	CF 26	CFQ26/1-L	27	0.0	SW	1000	27	0.00	0.00	$ -	$ -	$ -		
20	B Hall Office 1	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307.2	4	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1200	153.6	153.60	0.00	$ 16.44	$ 202.50	$ 35.00	12.3	10.2
20	Nurse	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	460.8	6	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1200	230.4	230.40	0.00	$ 24.65	$ 202.50	$ 35.00	8.2	6.8
20	Nurse	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2400	76.8	1	S 32 C F 1 (ELE)	F41LL	32	0.0	C-OCC	1200	38.4	38.40	0.00	$ 4.11	$ 202.50	$ 35.00	49.3	40.8
15	Nurse Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	0.00	0.00	$ -	$ -	$ -		
20	Nurse Closet	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64.0	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64	0.00	0.00	$ -	$ -	$ -		
20	B Hall Office 2	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307.2	4	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1200	153.6	153.60	0.00	$ 16.44	$ 202.50	$ 35.00	12.3	10.2
20	1	18	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2400	1,382.4	18	S 32 C F 1 (ELE)	F41LL	32	0.6	C-OCC	1680	967.68	414.72	0.00	$ 44.38	$ 202.50	$ 35.00	4.6	3.8
15	1	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	1	9	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	691.2	9	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	1680	483.84	207.36	0.00	$ 22.19	$ 202.50	$ 35.00	9.1	7.5
15	1	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	B Hall Small Classroom	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	460.8	6	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
20	2	16	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,228.8	16	S 32 C F 1 (ELE)	F41LL	32	0.5	C-OCC	1680	860.16	368.64	0.00	$ 39.44	$ 202.50	$ 35.00	5.1	4.2
15	2	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	2	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	614.4	8	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	1680	430.08	184.32	0.00	$ 19.72	$ 202.50	$ 35.00	10.3	8.5
15	2	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	3	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	921.6	12	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	3	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	3	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	460.8	6	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	3	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	4	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	921.6	12	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	4	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	4	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	460.8	6	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	4	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	B Hall Boy's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128.0	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	0.00	0.00	$ -	$ -	$ -		
20	B Hall Girl's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128.0	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	0.00	0.00	$ -	$ -	$ -		
20	Media Center	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075.2	14	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	752.64	322.56	0.00	$ 34.51	$ 202.50	$ 35.00	5.9	4.9
20	Media Center	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075.2	14	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	752.64	322.56	0.00	$ 34.51	$ 202.50	$ 35.00	5.9	4.9
20	Media Center	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075.2	14	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	752.64	322.56	0.00	$ 34.51	$ 202.50	$ 35.00	5.9	4.9
20	Media Center	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075.2	14	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	752.64	322.56	0.00	$ 34.51	$ 202.50	$ 35.00	5.9	4.9
20	Media Center	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075.2	14	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	752.64	322.56	0.00	$ 34.51	$ 202.50	$ 35.00	5.9	4.9
20	5	16	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,228.8	16	S 32 C F 1 (ELE)	F41LL	32	0.5	C-OCC	1680	860.16	368.64	0.00	$ 39.44	$ 202.50	$ 35.00	5.1	4.2
15	5	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	5	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	614.4	8	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	1680	430.08	184.32	0.00	$ 19.72	$ 202.50	$ 35.00	10.3	8.5
15	5	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	6	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	921.6	12	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	6	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	6	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	460.8	6	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	6	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	7	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075.2	14	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	752.64	322.56	0.00	$ 34.51	$ 202.50	$ 35.00	5.9	4.9
15	7	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	7	7	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	537.6	7	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	376.32	161.28	0.00	$ 17.26	$ 202.50	$ 35.00	11.7	9.7
15	7	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	8	20	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2400	1,536.0	20	S 32 C F 1 (ELE)	F41LL	32	0.6	C-OCC	1680	1075.2	460.80	0.00	$ 49.31	$ 202.50	$ 35.00	4.1	3.4
15	8	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	8	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768.0	10	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	1680	537.6	230.40	0.00	$ 24.65	$ 202.50	$ 35.00	8.2	6.8
15	8	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	8 Storage	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64.0	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64	0.00	0.00	$ -	$ -	$ -		
20	9	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	921.6	12	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	9	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	9	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	460.8	6	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	9	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	10	16	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,228.8	16	S 32 C F 1 (ELE)	F41LL	32	0.5	C-OCC	1680	860.16	368.64	0.00	$ 39.44	$ 202.50	$ 35.00	5.1	4.2
15	10	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	10	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	614.4	8	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	1680	430.08	184.32	0.00	$ 19.72	$ 202.50	$ 35.00	10.3	8.5
15	10	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	10 Storage	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64.0	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64	0.00	0.00	$ -	$ -	$ -		
15	10A	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	576.0	4	S 32 C F 2 (ELE)	F42LL	60	0.2	C-OCC	1680	403.2	172.80	0.00	$ 18.49	$ 202.50	$ 35.00	11.0	9.1
20	11	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	921.6	12	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	11	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	11	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	460.8	6	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	11	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	12	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	921.6	12	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	12	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	12	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	460.8	6	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	12	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	13	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	921.6	12	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	13	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1

Energy Audit of Eisenhower Middle School

CHA Project No.24454 **Cost of Electricity:** **$0.107 $/kWh**

ECM-2 Install Occupancy Sensors **$6.74 $/kW**

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
20	13	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	460.8	6	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	13	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	14	16	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,228.8	16	S 32 C F 1 (ELE)	F41LL	32	0.5	C-OCC	1680	860.16	368.64	0.00	$ 39.44	$ 202.50	$ 35.00	5.1	4.2
15	14	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	432.0	3	S 32 C F 2 (ELE)	F42LL	60	0.2	C-OCC	1680	302.4	129.60	0.00	$ 13.87	$ 202.50	$ 35.00	14.6	12.1
20	14	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	614.4	8	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	1680	430.08	184.32	0.00	$ 19.72	$ 202.50	$ 35.00	10.3	8.5
15	14	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	432.0	3	S 32 C F 2 (ELE)	F42LL	60	0.2	C-OCC	1680	302.4	129.60	0.00	$ 13.87	$ 202.50	$ 35.00	14.6	12.1
245	15	18	T 32 R F 3 (ELE)	F43LE	110	2.0	SW	2400	4,752.0	18	T 32 R F 3 (ELE)	F43LE	110	2.0	C-OCC	1680	3326.4	1425.60	0.00	$ 152.54	$ 202.50	$ 35.00	1.3	1.1
245	15 Storage 1	2	T 32 R F 3 (ELE)	F43LE	110	0.2	SW	1000	220.0	2	T 32 R F 3 (ELE)	F43LE	110	0.2	SW	1000	220	0.00	0.00	$ -	$ -	$ -		
245	15 Storage 2	2	T 32 R F 3 (ELE)	F43LE	110	0.2	SW	1000	220.0	2	T 32 R F 3 (ELE)	F43LE	110	0.2	SW	1000	220	0.00	0.00	$ -	$ -	$ -		
245	16	12	T 32 R F 3 (ELE)	F43LE	110	1.3	SW	2400	3,168.0	12	T 32 R F 3 (ELE)	F43LE	110	1.3	C-OCC	1680	2217.6	950.40	0.00	$ 101.69	$ 202.50	$ 35.00	2.0	1.6
245	17	12	T 32 R F 3 (ELE)	F43LE	110	1.3	SW	2400	3,168.0	12	T 32 R F 3 (ELE)	F43LE	110	1.3	C-OCC	1680	2217.6	950.40	0.00	$ 101.69	$ 202.50	$ 35.00	2.0	1.6
245	18	12	T 32 R F 3 (ELE)	F43LE	110	1.3	SW	2400	3,168.0	12	T 32 R F 3 (ELE)	F43LE	110	1.3	C-OCC	1680	2217.6	950.40	0.00	$ 101.69	$ 202.50	$ 35.00	2.0	1.6
245	19	12	T 32 R F 3 (ELE)	F43LE	110	1.3	SW	2400	3,168.0	12	T 32 R F 3 (ELE)	F43LE	110	1.3	C-OCC	1680	2217.6	950.40	0.00	$ 101.69	$ 202.50	$ 35.00	2.0	1.6
15	20	12	S 32 C F 2 (ELE)	F42LL	60	0.7	SW	2400	1,728.0	12	S 32 C F 2 (ELE)	F42LL	60	0.7	C-OCC	1680	1209.6	518.40	0.00	$ 55.47	$ 202.50	$ 35.00	3.7	3.0
20	21	16	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,228.8	16	S 32 C F 1 (ELE)	F41LL	32	0.5	C-OCC	1680	860.16	368.64	0.00	$ 39.44	$ 202.50	$ 35.00	5.1	4.2
15	21	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	21	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	614.4	8	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	1680	430.08	184.32	0.00	$ 19.72	$ 202.50	$ 35.00	10.3	8.5
15	21	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
15	22	12	S 32 C F 2 (ELE)	F42LL	60	0.7	SW	2400	1,728.0	12	S 32 C F 2 (ELE)	F42LL	60	0.7	C-OCC	1680	1209.6	518.40	0.00	$ 55.47	$ 202.50	$ 35.00	3.7	3.0
20	23	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075.2	14	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	752.64	322.56	0.00	$ 34.51	$ 202.50	$ 35.00	5.9	4.9
15	23	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	23	7	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	537.6	7	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	376.32	161.28	0.00	$ 17.26	$ 202.50	$ 35.00	11.7	9.7
15	23	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
15	24	9	S 32 C F 2 (ELE)	F42LL	60	0.5	SW	2400	1,296.0	9	S 32 C F 2 (ELE)	F42LL	60	0.5	C-OCC	1680	907.2	388.80	0.00	$ 41.60	$ 202.50	$ 35.00	4.9	4.0
20	25	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768.0	10	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	1680	537.6	230.40	0.00	$ 24.65	$ 202.50	$ 35.00	8.2	6.8
15	25	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	25	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	25	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
15	26	9	S 32 C F 2 (ELE)	F42LL	60	0.5	SW	2400	1,296.0	9	S 32 C F 2 (ELE)	F42LL	60	0.5	C-OCC	1680	907.2	388.80	0.00	$ 41.60	$ 202.50	$ 35.00	4.9	4.0
20	27	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768.0	10	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	1680	537.6	230.40	0.00	$ 24.65	$ 202.50	$ 35.00	8.2	6.8
15	27	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	27	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	27	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	28	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	921.6	12	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	28	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	28	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	460.8	6	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	28	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	D Hall Closet 1	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
15	D Hall Closet 2	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	60.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	60	0.00	0.00	$ -	$ -	$ -		
11	D Hall Closet 3	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72.0	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	0.00	0.00	$ -	$ -	$ -		
20	D Hall Closet 3	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64.0	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64	0.00	0.00	$ -	$ -	$ -		
20	D Hall Closet 4	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	128.0	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	128	0.00	0.00	$ -	$ -	$ -		
20	A Hall Boy's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128.0	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	0.00	0.00	$ -	$ -	$ -		
20	A Hall Girl's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128.0	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	0.00	0.00	$ -	$ -	$ -		
20	29/30	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768.0	10	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	1680	537.6	230.40	0.00	$ 24.65	$ 202.50	$ 35.00	8.2	6.8
15	29/30	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	100.8	43.20	0.00	$ 4.62	$ 202.50	$ 35.00	43.8	36.2
20	29/30	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	29/30	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	100.8	43.20	0.00	$ 4.62	$ 202.50	$ 35.00	43.8	36.2
20	29/30	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768.0	10	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	1680	537.6	230.40	0.00	$ 24.65	$ 202.50	$ 35.00	8.2	6.8
15	29/30	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	100.8	43.20	0.00	$ 4.62	$ 202.50	$ 35.00	43.8	36.2
20	29/30	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	29/30	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	100.8	43.20	0.00	$ 4.62	$ 202.50	$ 35.00	43.8	36.2
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563.2	11	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1200	422.4	140.80	0.00	$ 15.07	$ 202.50	$ 35.00	13.4	11.1
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563.2	11	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1200	422.4	140.80	0.00	$ 15.07	$ 202.50	$ 35.00	13.4	11.1
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563.2	11	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1200	422.4	140.80	0.00	$ 15.07	$ 202.50	$ 35.00	13.4	11.1
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563.2	11	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1200	422.4	140.80	0.00	$ 15.07	$ 202.50	$ 35.00	13.4	11.1
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563.2	11	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1200	422.4	140.80	0.00	$ 15.07	$ 202.50	$ 35.00	13.4	11.1
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563.2	11	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1200	422.4	140.80	0.00	$ 15.07	$ 202.50	$ 35.00	13.4	11.1
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563.2	11	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1200	422.4	140.80	0.00	$ 15.07	$ 202.50	$ 35.00	13.4	11.1
20	Kitchen	35	S 32 C F 1 (ELE)	F41LL	32	1.1	SW	1600	1,792.0	35	S 32 C F 1 (ELE)	F41LL	32	1.1	C-OCC	1200	1344	448.00	0.00	$ 47.94	$ 202.50	$ 35.00	4.2	3.5
20	Kitchen Storage Large	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	1000	192.0	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	1000	192	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Office	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	153.6	2	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1200	76.8	76.80	0.00	$ 8.22	$ 202.50	$ 35.00	24.6	20.4
20	Kitchen Storage A	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64.0	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Storage B	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Storage C	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Storage D	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Storage E	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Storage F	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
146	Gym	14	High Bay MH 400	MH400/1	458	6.4	SW	2000	12,824.0	14	High Bay MH 400	MH400/1	458	6.4	C-OCC	2000	12824	0.00	0.00	$ -	$ 202.50	$ 35.00		
146	Gym	14	High Bay MH 400	MH400/1	458	6.4	SW	2000	12,824.0	14	High Bay MH 400	MH400/1	458	6.4	C-OCC	2000	12824	0.00	0.00	$ -	$ 202.50	$ 35.00		
20	Gym Office	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307.2	4	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1200	153.6	153.60	0.00	$ 16.44	$ 202.50	$ 35.00	12.3	10.2
20	Gym Area Mechanical 1	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	128.0	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	128	0.00	0.00	$ -	$ -	$ -		
20	Gym Area Mechanical 2	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64.0	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64	0.00	0.00	$ -	$ -	$ -		
20	Boy's Locker Room	19	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2800	1,702.4	19	S 32 C F 1 (ELE)	F41LL	32	0.6	C-OCC	2000	1216	486.40	0.00	$ 52.04	$ 202.50	$ 35.00	3.9	3.2
20	Boy's Locker Room	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2800	268.8	3	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	2000	192	76.80	0.00	$ 8.22	$ 202.50	$ 35.00	24.6	20.4
15	Boy's Locker Room	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2800	504.0	3	S 32 C F 2 (ELE)	F42LL	60	0.2	C-OCC	2000	360	144.00	0.00	$ 15.41	$ 202.50	$ 35.00	13.1	10.9
15	Boy's Locker Room	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2800	168.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	2000	120	48.00	0.00	$ 5.14	$ 202.50	$ 35.00	39.4	32.6
5	Boy's Locker Room	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	SW	2800	168.0	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	C-OCC	2000	120	48.00	0.00	$ 5.14	$ 202.50	$ 35.00	39.4	32.6
108	Boy's Locker Room	2	I 65	I65/1	65	0.1	SW	2800	364.0	2	I 65	I65/1	65	0.1	C-OCC	2000	260	104.00	0.00	$ 11.13	$ 202.50	$ 35.00	18.2	15.1
20	Girl's Locker Room	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2800	716.8	8	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	2000	512	204.80	0.00	$ 21.91	$ 202.50	$ 35.00	9.2	7.6
20	Girl's Locker Room	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2800	716.8	8	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	2000	512	204.80	0.00	$ 21.91	$ 202.50	$ 35.00	9.2	7.6
20	Girl's Locker Room	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2800	358.4	4	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	2000	256	102.40	0.00	$ 10.96	$ 202.50	$ 35.00	18.5	15.3
20	Girl's Locker Room	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2800	179.2	2	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	2000	128	51.20	0.00	$ 5.48	$ 202.50	$ 35.00	37.0	30.6
15	Girl's Locker Room	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2800	168.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	2000	120	48.00	0.00	$ 5.14	$ 202.50	$ 35.00	39.4	32.6
15	Girl's Locker Room	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2800	168.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	2000	120	48.00	0.00	$ 5.14	$ 202.50	$ 35.00	39.4	32.6
11	Girl's Locker Room	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2800	403.2	2	S 34 P F 2 (MAG)	F42EE	72	0.1	C-OCC	2000	288	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
191	Girl's Locker Room	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.1	SW	2800	344.4	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.1	C-OCC	2000	246	98.40	0.00	$ 10.53	$ 202.50	$ 35.00	19.2	15.9
191	Girl's Locker Room	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.1	SW	2800	344.4	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.1	C-OCC	2000	246	98.40	0.00	$ 10.53	$ 202.50	$ 35.00	19.2	15.9
20	Gym Front Storage Room	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	1000	256.0	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	1000	256	0.00	0.00	$ -	$ -	$ -		
20	Gym Back Storage Room	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	1000	192.0	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	1000	192	0.00	0.00	$ -	$ -	$ -		
15	31	9	S 32 C F 2 (ELE)	F42LL	60	0.5	SW	2400	1,296.0	9	S 32 C F 2 (ELE)	F42LL	60	0.5	C-OCC	1680	907.2	388.80	0.00	$ 41.60	$ 202.50	$ 35.00	4.9	4.0
15	31	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2400	1,440.0	10	S 32 C F 2 (ELE)	F42LL	60	0.6	C-OCC	1680	1008	432.00	0.00	$ 46.22	$ 202.50	$ 35.00	4.4	3.6
15	31	9	S 32 C F 2 (ELE)	F42LL	60	0.5	SW	2400	1,296.0	9	S 32 C F 2 (ELE)	F42LL	60	0.5	C-OCC	1680	907.2	388.80	0.00	$ 41.60	$ 202.50	$ 35.00	4.9	4.0

Energy Audit of Eisenhower Middle School

CHA Project No.24454

ECM-2 Install Occupancy Sensors

Cost of Electricity: **$0.107 $/kWh**

$6.74 $/kW

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
15	31 Storage	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	120.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	120	0.00	0.00	$ -	$ -	$ -		
15	31/33 Shared Room	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	120.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	120	0.00	0.00	$ -	$ -	$ -		
15	31A	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2400	1,440.0	10	S 32 C F 2 (ELE)	F42LL	60	0.6	C-OCC	1680	1008	432.00	0.00	$ 46.22	$ 202.50	$ 35.00	4.4	3.6
1	31A	2	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.1	SW	2400	148.8	2	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.1	C-OCC	1680	104.16	44.64	0.00	$ 4.78	$ 202.50	$ 35.00	42.4	35.1
20	32	18	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2400	1,382.4	18	S 32 C F 1 (ELE)	F41LL	32	0.6	C-OCC	1680	967.68	414.72	0.00	$ 44.38	$ 202.50	$ 35.00	4.6	3.8
15	32	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	32	9	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	691.2	9	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	1680	483.84	207.36	0.00	$ 22.19	$ 202.50	$ 35.00	9.1	7.5
15	32	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
254	33	12	T 32 R F 4 (ELE)	F44LL	118	1.4	SW	2400	3,398.4	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	1680	2378.88	1019.52	0.00	$ 109.09	$ 202.50	$ 35.00	1.9	1.5
245	33	3	T 32 R F 3 (ELE)	F43LE	110	0.3	SW	2400	792.0	3	T 32 R F 3 (ELE)	F43LE	110	0.3	C-OCC	1680	554.4	237.60	0.00	$ 25.42	$ 202.50	$ 35.00	8.0	6.6
213	34	11	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.0	SW	2400	2,376.0	11	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.0	C-OCC	1680	1663.2	712.80	0.00	$ 76.27	$ 202.50	$ 35.00	2.7	2.2
20	35	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	921.6	12	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	35	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	35	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	460.8	6	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	35	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
213	36	8	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.7	SW	2400	1,728.0	8	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.7	C-OCC	1680	1209.6	518.40	0.00	$ 55.47	$ 202.50	$ 35.00	3.7	3.0
213	37	12	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.1	SW	2400	2,592.0	12	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.1	C-OCC	1680	1814.4	777.60	0.00	$ 83.20	$ 202.50	$ 35.00	2.4	2.0
20	37 Closet	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
20	38	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	921.6	12	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	38	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	38	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	460.8	6	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	38	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	39	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768.0	10	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	1680	537.6	230.40	0.00	$ 24.65	$ 202.50	$ 35.00	8.2	6.8
15	39	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	100.8	43.20	0.00	$ 4.62	$ 202.50	$ 35.00	43.8	36.2
20	39	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	39	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	100.8	43.20	0.00	$ 4.62	$ 202.50	$ 35.00	43.8	36.2
20	39	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768.0	10	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	1680	537.6	230.40	0.00	$ 24.65	$ 202.50	$ 35.00	8.2	6.8
15	39	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	100.8	43.20	0.00	$ 4.62	$ 202.50	$ 35.00	43.8	36.2
20	39	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	39	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	100.8	43.20	0.00	$ 4.62	$ 202.50	$ 35.00	43.8	36.2
20	40	16	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,228.8	16	S 32 C F 1 (ELE)	F41LL	32	0.5	C-OCC	1680	860.16	368.64	0.00	$ 39.44	$ 202.50	$ 35.00	5.1	4.2
15	40	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
15	40	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	40 Closet 1	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
20	40 Closet 2	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
79	Auditorium	56	SP I 100	I100/1	100	5.6	SW	1000	5,600.0	56	SP I 100	I100/1	100	5.6	SW	750	4200	1400.00	0.00	$ 149.80	$ -	$ -	0.0	0.0
133	Auditorium	1	CF 26	CFQ26/1-L	27	0.0	SW	1000	27.0	1	CF 26	CFQ26/1-L	27	0.0	SW	750	20.25	6.75	0.00	$ 0.72	$ -	$ -	0.0	0.0
8	Stage	2	MH 175	MH175/1	215	0.4	SW	1000	430.0	2	MH 175	MH175/1	215	0.4	SW	1000	430	0.00	0.00	$ -	$ -	$ -		
79	Stage	2	SP I 100	I100/1	100	0.2	SW	1000	200.0	2	SP I 100	I100/1	100	0.2	SW	1000	200	0.00	0.00	$ -	$ -	$ -		
108	Stage Closet	1	I 65	I65/1	65	0.1	SW	1000	65.0	1	I 65	I65/1	65	0.1	SW	1000	65	0.00	0.00	$ -	$ -	$ -		
15	H Hall Boy's Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	0.00	0.00	$ -	$ -	$ -		
15	H Hall Girl's Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	0.00	0.00	$ -	$ -	$ -		
108	H Hall Closet	1	I 65	I65/1	65	0.1	SW	1000	65.0	1	I 65	I65/1	65	0.1	SW	1000	65	0.00	0.00	$ -	$ -	$ -		
245	Team Room T1	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320.0	5	T 32 R F 3 (ELE)	F43LE	110	0.6	C-OCC	1680	924	396.00	0.00	$ 42.37	$ 202.50	$ 35.00	4.8	4.0
245	Team Room T1	6	T 32 R F 3 (ELE)	F43LE	110	0.7	SW	2400	1,584.0	6	T 32 R F 3 (ELE)	F43LE	110	0.7	C-OCC	1680	1108.8	475.20	0.00	$ 50.85	$ 202.50	$ 35.00	4.0	3.3
245	Team Room T1	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320.0	5	T 32 R F 3 (ELE)	F43LE	110	0.6	C-OCC	1680	924	396.00	0.00	$ 42.37	$ 202.50	$ 35.00	4.8	4.0
245	Team Room T2	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320.0	5	T 32 R F 3 (ELE)	F43LE	110	0.6	C-OCC	1680	924	396.00	0.00	$ 42.37	$ 202.50	$ 35.00	4.8	4.0
245	Team Room T2	6	T 32 R F 3 (ELE)	F43LE	110	0.7	SW	2400	1,584.0	6	T 32 R F 3 (ELE)	F43LE	110	0.7	C-OCC	1680	1108.8	475.20	0.00	$ 50.85	$ 202.50	$ 35.00	4.0	3.3
245	Team Room T2	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320.0	5	T 32 R F 3 (ELE)	F43LE	110	0.6	C-OCC	1680	924	396.00	0.00	$ 42.37	$ 202.50	$ 35.00	4.8	4.0
245	Team Room T3	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320.0	5	T 32 R F 3 (ELE)	F43LE	110	0.6	C-OCC	1680	924	396.00	0.00	$ 42.37	$ 202.50	$ 35.00	4.8	4.0
245	Team Room T3	6	T 32 R F 3 (ELE)	F43LE	110	0.7	SW	2400	1,584.0	6	T 32 R F 3 (ELE)	F43LE	110	0.7	C-OCC	1680	1108.8	475.20	0.00	$ 50.85	$ 202.50	$ 35.00	4.0	3.3
245	Team Room T3	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320.0	5	T 32 R F 3 (ELE)	F43LE	110	0.6	C-OCC	1680	924	396.00	0.00	$ 42.37	$ 202.50	$ 35.00	4.8	4.0
245	Team Room T4	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320.0	5	T 32 R F 3 (ELE)	F43LE	110	0.6	C-OCC	1680	924	396.00	0.00	$ 42.37	$ 202.50	$ 35.00	4.8	4.0
245	Team Room T4	6	T 32 R F 3 (ELE)	F43LE	110	0.7	SW	2400	1,584.0	6	T 32 R F 3 (ELE)	F43LE	110	0.7	C-OCC	1680	1108.8	475.20	0.00	$ 50.85	$ 202.50	$ 35.00	4.0	3.3
245	Team Room T4	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320.0	5	T 32 R F 3 (ELE)	F43LE	110	0.6	C-OCC	1680	924	396.00	0.00	$ 42.37	$ 202.50	$ 35.00	4.8	4.0
1	Team Room	14	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.4	SW	2400	1,041.6	14	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.4	C-OCC	1680	729.12	312.48	0.00	$ 33.44	$ 202.50	$ 35.00	6.1	5.0
245	N. Team Room Aux Room	3	T 32 R F 3 (ELE)	F43LE	110	0.3	SW	2400	792.0	3	T 32 R F 3 (ELE)	F43LE	110	0.3	C-OCC	1680	554.4	237.60	0.00	$ 25.42	$ 202.50	$ 35.00	8.0	6.6
245	S. Team Room Aux Room	3	T 32 R F 3 (ELE)	F43LE	110	0.3	SW	2400	792.0	3	T 32 R F 3 (ELE)	F43LE	110	0.3	C-OCC	1680	554.4	237.60	0.00	$ 25.42	$ 202.50	$ 35.00	8.0	6.6
254	41	14	T 32 R F 4 (ELE)	F44LL	118	1.7	SW	2400	3,964.8	14	T 32 R F 4 (ELE)	F44LL	118	1.7	C-OCC	1680	2775.36	1189.44	0.00	$ 127.27	$ 202.50	$ 35.00	1.6	1.3
254	41/42 Office	2	T 32 R F 4 (ELE)	F44LL	118	0.2	SW	2400	566.4	2	T 32 R F 4 (ELE)	F44LL	118	0.2	C-OCC	1200	283.2	283.20	0.00	$ 30.30	$ 202.50	$ 35.00	6.7	5.5
254	42	15	T 32 R F 4 (ELE)	F44LL	118	1.8	SW	2400	4,248.0	15	T 32 R F 4 (ELE)	F44LL	118	1.8	C-OCC	1680	2973.6	1274.40	0.00	$ 136.36	$ 202.50	$ 35.00	1.5	1.2
245	42 Closet 1	1	T 32 R F 3 (ELE)	F43LE	110	0.1	SW	1000	110.0	1	T 32 R F 3 (ELE)	F43LE	110	0.1	SW	1000	110	0.00	0.00	$ -	$ -	$ -		
245	42 Closet 2	1	T 32 R F 3 (ELE)	F43LE	110	0.1	SW	1000	110.0	1	T 32 R F 3 (ELE)	F43LE	110	0.1	SW	1000	110	0.00	0.00	$ -	$ -	$ -		
254	43	28	T 32 R F 4 (ELE)	F44LL	118	3.3	SW	2400	7,929.6	28	T 32 R F 4 (ELE)	F44LL	118	3.3	C-OCC	1680	5550.72	2378.88	0.00	$ 254.54	$ 202.50	$ 35.00	0.8	0.7
15	M Hall Closet 1	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	180.0	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	180	0.00	0.00	$ -	$ -	$ -		
15	M Hall Closet 2	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	180.0	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	180	0.00	0.00	$ -	$ -	$ -		
15	M Hall Closet 3	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	180.0	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	180	0.00	0.00	$ -	$ -	$ -		
15	M Hall Closet 4	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	180.0	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	180	0.00	0.00	$ -	$ -	$ -		
15	Main Entrance Lobby	12	S 32 C F 2 (ELE)	F42LL	60	0.7	SW	2280	1,641.6	12	S 32 C F 2 (ELE)	F42LL	60	0.7	SW	2280	1641.6	0.00	0.00	$ -	$ -	$ -		
20	A Hallway	19	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2280	1,386.2	19	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2280	1386.24	0.00	0.00	$ -	$ -	$ -		
15	A Hallway	13	S 32 C F 2 (ELE)	F42LL	60	0.8	SW	2280	1,778.4	13	S 32 C F 2 (ELE)	F42LL	60	0.8	SW	2280	1778.4	0.00	0.00	$ -	$ -	$ -		
20	B Hallway	35	S 32 C F 1 (ELE)	F41LL	32	1.1	SW	2280	2,553.6	35	S 32 C F 1 (ELE)	F41LL	32	1.1	SW	2280	2553.6	0.00	0.00	$ -	$ -	$ -		
20	C Hallway	35	S 32 C F 1 (ELE)	F41LL	32	1.1	SW	2280	2,553.6	35	S 32 C F 1 (ELE)	F41LL	32	1.1	SW	2280	2553.6	0.00	0.00	$ -	$ -	$ -		
20	D Hallway	35	S 32 C F 1 (ELE)	F41LL	32	1.1	SW	2280	2,553.6	35	S 32 C F 1 (ELE)	F41LL	32	1.1	SW	2280	2553.6	0.00	0.00	$ -	$ -	$ -		
4	E Hallway	2	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	SW	2280	328.3	2	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	SW	2280	328.32	0.00	0.00	$ -	$ -	$ -		
1	E Hallway	22	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.7	SW	2280	1,555.0	22	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.7	SW	2280	1554.96	0.00	0.00	$ -	$ -	$ -		
4	E Hallway	6	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.4	SW	2280	985.0	6	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.4	SW	2280	984.96	0.00	0.00	$ -	$ -	$ -		
20	F Hallway	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	364.8	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	364.8	0.00	0.00	$ -	$ -	$ -		
20	G Hallway	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	437.8	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	437.76	0.00	0.00	$ -	$ -	$ -		
15	H Hallway	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2280	1,368.0	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2280	1368	0.00	0.00	$ -	$ -	$ -		
15	M hallway	8	S 32 C F 2 (ELE)	F42LL	60	0.5	SW	2280	1,094.4	8	S 32 C F 2 (ELE)	F42LL	60	0.5	SW	2280	1094.4	0.00	0.00	$ -	$ -	$ -		
15	M hallway	5	S 32 C F 2 (ELE)	F42LL	60	0.3	SW	2280	684.0	5	S 32 C F 2 (ELE)	F42LL	60	0.3	SW	2280	684	0.00	0.00	$ -	$ -	$ -		
5	Team Room Lobby	9	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.5	SW	2280	1,231.2	9	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.5	SW	2280	1231.2	0.00	0.00	$ -	$ -	$ -		
68	Exterior	22	175 MH WALL	MH175/1	215	4.7	SW	4368	20,660.6	22	175 MH WALL	MH175/1	215	4.7	SW	4368	20660.64	0.00	0.00	$ -	$ -	$ -		
37	Exterior	2	SP 26 R CF 2	CFQ26/2-L	50	0.1	SW	4368	436.8	2	SP 26 R CF 2	CFQ26/2-L	50	0.1	SW	4368	436.8	0.00	0.00	$ -	$ -	$ -		
79	Exterior	3	SP I 100	I100/1	100	0.3	SW	4368	1,310.4	3	SP I 100	I100/1	100	0.3	SW	4368	1310.4	0.00	0.00	$ -	$ -	$ -		
	Total	**1,732**				**104**			**236,253**	**1,732**				**104**			**187,619**	**48,634**	**0**	**$ 5,203.88**	**$ 40,095.00**	**$ 6,930.00**		
																	Demand Savings			**0.0**	**$ -**			
																	kWh Savings			**48,634**	**$ 5,203.88**			
																	Total Savings				**$ 5,203.88**		**7.7**	**6.4**

Energy Audit of Eisenhower Middle School

CHA Project No.24454 **Cost of Electricity:** **$0.107 $/kWh**

ECM-3 Lighting Replacements with Occupancy Sensors **$6.74 $/kW**

	EXISTING CONDITIONS									RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
20	Main Office Common	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	438	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2,280	437.76	0.00	0.00	$ -	$ -	$ -		
20	Main Office Common	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	438	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2,280	437.76	0.00	0.00	$ -	$ -	$ -		
20	Main Office Common	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2280	146	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2,280	145.92	0.00	0.00	$ -	$ -	$ -		
20	Main Office Common	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2280	73	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	2,280	72.96	0.00	0.00	$ -	$ -	$ -		
20	Main Office Common	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2280	73	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	2,280	72.96	0.00	0.00	$ -	$ -	$ -		
11	Main Office	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	173	1	C 28 P F 2	F42SSILL	48	0.048	C-OCC	1,200	57.6	115.20	0.02	$ 14.27	$ 308.75	$ 45.00	21.6	18.5
20	Main Office	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307	4	S 32 C F 1 (ELE)	F41LL	32	0.128	C-OCC	1,200	153.6	153.60	0.00	$ 16.44	$ 202.50	$ 35.00	12.3	10.2
20	Main Office	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	154	2	S 32 C F 1 (ELE)	F41LL	32	0.064	C-OCC	1,200	76.8	76.80	0.00	$ 8.22	$ 202.50	$ 35.00	24.6	20.4
20	Main Office	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307	4	S 32 C F 1 (ELE)	F41LL	32	0.128	C-OCC	1,200	153.6	153.60	0.00	$ 16.44	$ 202.50	$ 35.00	12.3	10.2
20	Main Office	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	154	2	S 32 C F 1 (ELE)	F41LL	32	0.064	C-OCC	1,200	76.8	76.80	0.00	$ 8.22	$ 202.50	$ 35.00	24.6	20.4
20	Main Office	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307	4	S 32 C F 1 (ELE)	F41LL	32	0.128	C-OCC	1,200	153.6	153.60	0.00	$ 16.44	$ 202.50	$ 35.00	12.3	10.2
20	Main Office	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	154	2	S 32 C F 1 (ELE)	F41LL	32	0.064	C-OCC	1,200	76.8	76.80	0.00	$ 8.22	$ 202.50	$ 35.00	24.6	20.4
20	Main Office	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307	4	S 32 C F 1 (ELE)	F41LL	32	0.128	C-OCC	1,200	153.6	153.60	0.00	$ 16.44	$ 202.50	$ 35.00	12.3	10.2
20	Guidance Common	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	438	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2,280	437.76	0.00	0.00	$ -	$ -	$ -		
20	Guidance	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	154	2	S 32 C F 1 (ELE)	F41LL	32	0.064	C-OCC	1,200	76.8	76.80	0.00	$ 8.22	$ 202.50	$ 35.00	24.6	20.4
20	Guidance	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	154	2	S 32 C F 1 (ELE)	F41LL	32	0.064	C-OCC	1,200	76.8	76.80	0.00	$ 8.22	$ 202.50	$ 35.00	24.6	20.4
20	Guidance	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	154	2	S 32 C F 1 (ELE)	F41LL	32	0.064	C-OCC	1,200	76.8	76.80	0.00	$ 8.22	$ 202.50	$ 35.00	24.6	20.4
20	Faculty Room	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	230	3	S 32 C F 1 (ELE)	F41LL	32	0.096	C-OCC	1,200	115.2	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Faculty Room	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	230	3	S 32 C F 1 (ELE)	F41LL	32	0.096	C-OCC	1,200	115.2	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Faculty Room	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	230	3	S 32 C F 1 (ELE)	F41LL	32	0.096	C-OCC	1,200	115.2	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Faculty Room	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2400	77	1	S 32 C F 1 (ELE)	F41LL	32	0.032	C-OCC	1,200	38.4	38.40	0.00	$ 4.11	$ 202.50	$ 35.00	49.3	40.8
20	B Hall Men's Bathroom	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2000	64	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	2,000	64	0.00	0.00	$ -	$ -	$ -		
20	B Hall Women's Bathroom	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2000	64	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	2,000	64	0.00	0.00	$ -	$ -	$ -		
20	B Hall Closet 1	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1,000	32	0.00	0.00	$ -	$ -	$ -		
108	B Hall Closet 2	2	I 65	I65/1	65	0.1	SW	1000	130	2	CF 26	CFQ26/1-L	27	0.054	SW	1,000	54	76.00	0.08	$ 14.28	$ 40.50	$ -	2.8	2.8
133	B Hall Closet 2	1	CF 26	CFQ26/1-L	27	0.0	SW	1000	27	1	CF 26	CFQ26/1-L	27	0.027	SW	1,000	27	0.00	0.00	$ -	$ -	$ -		
20	B Hall Office 1	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307	4	S 32 C F 1 (ELE)	F41LL	32	0.128	C-OCC	1,200	153.6	153.60	0.00	$ 16.44	$ 202.50	$ 35.00	12.3	10.2
20	Nurse	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	C-OCC	1,200	230.4	230.40	0.00	$ 24.65	$ 202.50	$ 35.00	8.2	6.8
20	Nurse	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2400	77	1	S 32 C F 1 (ELE)	F41LL	32	0.032	C-OCC	1,200	38.4	38.40	0.00	$ 4.11	$ 202.50	$ 35.00	49.3	40.8
15	Nurse Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2,000	120	0.00	0.00	$ -	$ -	$ -		
20	Nurse Closet	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	1,000	64	0.00	0.00	$ -	$ -	$ -		
20	B Hall Office 2	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307	4	S 32 C F 1 (ELE)	F41LL	32	0.128	C-OCC	1,200	153.6	153.60	0.00	$ 16.44	$ 202.50	$ 35.00	12.3	10.2
20	1	18	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2400	1,382	18	S 32 C F 1 (ELE)	F41LL	32	0.576	C-OCC	1,680	967.68	414.72	0.00	$ 44.38	$ 202.50	$ 35.00	4.6	3.8
15	1	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	1	9	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	691	9	S 32 C F 1 (ELE)	F41LL	32	0.288	C-OCC	1,680	483.84	207.36	0.00	$ 22.19	$ 202.50	$ 35.00	9.1	7.5
15	1	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	B Hall Small Classroom	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	C-OCC	1,680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
20	2	16	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,229	16	S 32 C F 1 (ELE)	F41LL	32	0.512	C-OCC	1,680	860.16	368.64	0.00	$ 39.44	$ 202.50	$ 35.00	5.1	4.2
15	2	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	2	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	614	8	S 32 C F 1 (ELE)	F41LL	32	0.256	C-OCC	1,680	430.08	184.32	0.00	$ 19.72	$ 202.50	$ 35.00	10.3	8.5
15	2	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	3	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	C-OCC	1,680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	3	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	3	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	C-OCC	1,680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	3	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	4	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	C-OCC	1,680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	4	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	4	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	C-OCC	1,680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	4	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	B Hall Boy's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2,000	128	0.00	0.00	$ -	$ -	$ -		
20	B Hall Girl's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2,000	128	0.00	0.00	$ -	$ -	$ -		
20	Media Center	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075	14	S 32 C F 1 (ELE)	F41LL	32	0.448	C-OCC	1,680	752.64	322.56	0.00	$ 34.51	$ 202.50	$ 35.00	5.9	4.9
20	Media Center	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075	14	S 32 C F 1 (ELE)	F41LL	32	0.448	C-OCC	1,680	752.64	322.56	0.00	$ 34.51	$ 202.50	$ 35.00	5.9	4.9
20	Media Center	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075	14	S 32 C F 1 (ELE)	F41LL	32	0.448	C-OCC	1,680	752.64	322.56	0.00	$ 34.51	$ 202.50	$ 35.00	5.9	4.9
20	Media Center	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075	14	S 32 C F 1 (ELE)	F41LL	32	0.448	C-OCC	1,680	752.64	322.56	0.00	$ 34.51	$ 202.50	$ 35.00	5.9	4.9
20	Media Center	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075	14	S 32 C F 1 (ELE)	F41LL	32	0.448	C-OCC	1,680	752.64	322.56	0.00	$ 34.51	$ 202.50	$ 35.00	5.9	4.9
20	5	16	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,229	16	S 32 C F 1 (ELE)	F41LL	32	0.512	C-OCC	1,680	860.16	368.64	0.00	$ 39.44	$ 202.50	$ 35.00	5.1	4.2
15	5	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	5	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	614	8	S 32 C F 1 (ELE)	F41LL	32	0.256	C-OCC	1,680	430.08	184.32	0.00	$ 19.72	$ 202.50	$ 35.00	10.3	8.5
15	5	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	6	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	C-OCC	1,680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	6	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	6	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	C-OCC	1,680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	6	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	7	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075	14	S 32 C F 1 (ELE)	F41LL	32	0.448	C-OCC	1,680	752.64	322.56	0.00	$ 34.51	$ 202.50	$ 35.00	5.9	4.9
15	7	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	7	7	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	538	7	S 32 C F 1 (ELE)	F41LL	32	0.224	C-OCC	1,680	376.32	161.28	0.00	$ 17.26	$ 202.50	$ 35.00	11.7	9.7
15	7	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	8	20	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2400	1,536	20	S 32 C F 1 (ELE)	F41LL	32	0.64	C-OCC	1,680	1075.2	460.80	0.00	$ 49.31	$ 202.50	$ 35.00	4.1	3.4
15	8	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	8	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768	10	S 32 C F 1 (ELE)	F41LL	32	0.32	C-OCC	1,680	537.6	230.40	0.00	$ 24.65	$ 202.50	$ 35.00	8.2	6.8
15	8	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	8 Storage	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	1,000	64	0.00	0.00	$ -	$ -	$ -		
20	9	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	C-OCC	1,680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	9	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	9	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	C-OCC	1,680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	9	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	10	16	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,229	16	S 32 C F 1 (ELE)	F41LL	32	0.512	C-OCC	1,680	860.16	368.64	0.00	$ 39.44	$ 202.50	$ 35.00	5.1	4.2
15	10	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	10	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	614	8	S 32 C F 1 (ELE)	F41LL	32	0.256	C-OCC	1,680	430.08	184.32	0.00	$ 19.72	$ 202.50	$ 35.00	10.3	8.5
15	10	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	10 Storage	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	1,000	64	0.00	0.00	$ -	$ -	$ -		
15	10A	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	576	4	S 32 C F 2 (ELE)	F42LL	60	0.24	C-OCC	1,680	403.2	172.80	0.00	$ 18.49	$ 202.50	$ 35.00	11.0	9.1
20	11	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	C-OCC	1,680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	11	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	11	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	C-OCC	1,680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	11	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	12	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	C-OCC	1,680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	12	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	12	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	C-OCC	1,680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	12	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	13	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	C-OCC	1,680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	13	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1

Energy Audit of Eisenhower Middle School

CHA Project No.24454 **Cost of Electricity:** **$0.107 $/kWh**

ECM-3 Lighting Replacements with Occupancy Sensors **$6.74 $/kW**

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
20	13	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	C-OCC	1,680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	13	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	14	16	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,229	16	S 32 C F 1 (ELE)	F41LL	32	0.512	C-OCC	1,680	860.16	368.64	0.00	$ 39.44	$ 202.50	$ 35.00	5.1	4.2
15	14	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	432	3	S 32 C F 2 (ELE)	F42LL	60	0.18	C-OCC	1,680	302.4	129.60	0.00	$ 13.87	$ 202.50	$ 35.00	14.6	12.1
20	14	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	614	8	S 32 C F 1 (ELE)	F41LL	32	0.256	C-OCC	1,680	430.08	184.32	0.00	$ 19.72	$ 202.50	$ 35.00	10.3	8.5
15	14	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	432	3	S 32 C F 2 (ELE)	F42LL	60	0.18	C-OCC	1,680	302.4	129.60	0.00	$ 13.87	$ 202.50	$ 35.00	14.6	12.1
245	15	18	T 32 R F 3 (ELE)	F43LE	110	2.0	SW	2400	4,752	18	T 32 R F 3 (ELE)	F43LE	110	1.98	C-OCC	1,680	3326.4	1425.60	0.00	$ 152.54	$ 202.50	$ 35.00	1.3	1.1
245	15 Storage 1	2	T 32 R F 3 (ELE)	F43LE	110	0.2	SW	1000	220	2	T 32 R F 3 (ELE)	F43LE	110	0.22	SW	1,000	220	0.00	0.00	$ -	$ -	$ -		
245	15 Storage 2	2	T 32 R F 3 (ELE)	F43LE	110	0.2	SW	1000	220	2	T 32 R F 3 (ELE)	F43LE	110	0.22	SW	1,000	220	0.00	0.00	$ -	$ -	$ -		
245	16	12	T 32 R F 3 (ELE)	F43LE	110	1.3	SW	2400	3,168	12	T 32 R F 3 (ELE)	F43LE	110	1.32	C-OCC	1,680	2217.6	950.40	0.00	$ 101.69	$ 202.50	$ 35.00	2.0	1.6
245	17	12	T 32 R F 3 (ELE)	F43LE	110	1.3	SW	2400	3,168	12	T 32 R F 3 (ELE)	F43LE	110	1.32	C-OCC	1,680	2217.6	950.40	0.00	$ 101.69	$ 202.50	$ 35.00	2.0	1.6
245	18	12	T 32 R F 3 (ELE)	F43LE	110	1.3	SW	2400	3,168	12	T 32 R F 3 (ELE)	F43LE	110	1.32	C-OCC	1,680	2217.6	950.40	0.00	$ 101.69	$ 202.50	$ 35.00	2.0	1.6
245	19	12	T 32 R F 3 (ELE)	F43LE	110	1.3	SW	2400	3,168	12	T 32 R F 3 (ELE)	F43LE	110	1.32	C-OCC	1,680	2217.6	950.40	0.00	$ 101.69	$ 202.50	$ 35.00	2.0	1.6
15	20	12	S 32 C F 2 (ELE)	F42LL	60	0.7	SW	2400	1,728	12	S 32 C F 2 (ELE)	F42LL	60	0.72	C-OCC	1,680	1209.6	518.40	0.00	$ 55.47	$ 202.50	$ 35.00	3.7	3.0
20	21	16	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,229	16	S 32 C F 1 (ELE)	F41LL	32	0.512	C-OCC	1,680	860.16	368.64	0.00	$ 39.44	$ 202.50	$ 35.00	5.1	4.2
15	21	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	21	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	614	8	S 32 C F 1 (ELE)	F41LL	32	0.256	C-OCC	1,680	430.08	184.32	0.00	$ 19.72	$ 202.50	$ 35.00	10.3	8.5
15	21	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
15	22	12	S 32 C F 2 (ELE)	F42LL	60	0.7	SW	2400	1,728	12	S 32 C F 2 (ELE)	F42LL	60	0.72	C-OCC	1,680	1209.6	518.40	0.00	$ 55.47	$ 202.50	$ 35.00	3.7	3.0
20	23	14	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	1,075	14	S 32 C F 1 (ELE)	F41LL	32	0.448	C-OCC	1,680	752.64	322.56	0.00	$ 34.51	$ 202.50	$ 35.00	5.9	4.9
15	23	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	23	7	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	538	7	S 32 C F 1 (ELE)	F41LL	32	0.224	C-OCC	1,680	376.32	161.28	0.00	$ 17.26	$ 202.50	$ 35.00	11.7	9.7
15	23	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
15	24	9	S 32 C F 2 (ELE)	F42LL	60	0.5	SW	2400	1,296	9	S 32 C F 2 (ELE)	F42LL	60	0.54	C-OCC	1,680	907.2	388.80	0.00	$ 41.60	$ 202.50	$ 35.00	4.9	4.0
20	25	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768	10	S 32 C F 1 (ELE)	F41LL	32	0.32	C-OCC	1,680	537.6	230.40	0.00	$ 24.65	$ 202.50	$ 35.00	8.2	6.8
15	25	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	25	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	25	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
15	26	9	S 32 C F 2 (ELE)	F42LL	60	0.5	SW	2400	1,296	9	S 32 C F 2 (ELE)	F42LL	60	0.54	C-OCC	1,680	907.2	388.80	0.00	$ 41.60	$ 202.50	$ 35.00	4.9	4.0
20	27	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768	10	S 32 C F 1 (ELE)	F41LL	32	0.32	C-OCC	1,680	537.6	230.40	0.00	$ 24.65	$ 202.50	$ 35.00	8.2	6.8
15	27	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	27	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	27	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	28	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	C-OCC	1,680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	28	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	28	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	C-OCC	1,680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	28	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	D Hall Closet 1	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1,000	32	0.00	0.00	$ -	$ -	$ -		
15	D Hall Closet 2	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	60	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	1,000	60	0.00	0.00	$ -	$ -	$ -		
11	D Hall Closet 3	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.048	SW	1,000	48	24.00	0.02	$ 4.51	$ 106.25	$ 10.00	23.6	21.3
20	D Hall Closet 3	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	1,000	64	0.00	0.00	$ -	$ -	$ -		
20	D Hall Closet 4	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	128	4	S 32 C F 1 (ELE)	F41LL	32	0.128	SW	1,000	128	0.00	0.00	$ -	$ -	$ -		
20	A Hall Boy's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2,000	128	0.00	0.00	$ -	$ -	$ -		
20	A Hall Girl's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2,000	128	0.00	0.00	$ -	$ -	$ -		
20	29/30	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768	10	S 32 C F 1 (ELE)	F41LL	32	0.32	C-OCC	1,680	537.6	230.40	0.00	$ 24.65	$ 202.50	$ 35.00	8.2	6.8
15	29/30	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	S 32 C F 2 (ELE)	F42LL	60	0.06	C-OCC	1,680	100.8	43.20	0.00	$ 4.62	$ 202.50	$ 35.00	43.8	36.2
20	29/30	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	29/30	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	S 32 C F 2 (ELE)	F42LL	60	0.06	C-OCC	1,680	100.8	43.20	0.00	$ 4.62	$ 202.50	$ 35.00	43.8	36.2
20	29/30	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768	10	S 32 C F 1 (ELE)	F41LL	32	0.32	C-OCC	1,680	537.6	230.40	0.00	$ 24.65	$ 202.50	$ 35.00	8.2	6.8
15	29/30	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	S 32 C F 2 (ELE)	F42LL	60	0.06	C-OCC	1,680	100.8	43.20	0.00	$ 4.62	$ 202.50	$ 35.00	43.8	36.2
20	29/30	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	29/30	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	S 32 C F 2 (ELE)	F42LL	60	0.06	C-OCC	1,680	100.8	43.20	0.00	$ 4.62	$ 202.50	$ 35.00	43.8	36.2
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563	11	S 32 C F 1 (ELE)	F41LL	32	0.352	C-OCC	1,200	422.4	140.80	0.00	$ 15.07	$ 202.50	$ 35.00	13.4	11.1
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563	11	S 32 C F 1 (ELE)	F41LL	32	0.352	C-OCC	1,200	422.4	140.80	0.00	$ 15.07	$ 202.50	$ 35.00	13.4	11.1
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563	11	S 32 C F 1 (ELE)	F41LL	32	0.352	C-OCC	1,200	422.4	140.80	0.00	$ 15.07	$ 202.50	$ 35.00	13.4	11.1
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563	11	S 32 C F 1 (ELE)	F41LL	32	0.352	C-OCC	1,200	422.4	140.80	0.00	$ 15.07	$ 202.50	$ 35.00	13.4	11.1
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563	11	S 32 C F 1 (ELE)	F41LL	32	0.352	C-OCC	1,200	422.4	140.80	0.00	$ 15.07	$ 202.50	$ 35.00	13.4	11.1
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563	11	S 32 C F 1 (ELE)	F41LL	32	0.352	C-OCC	1,200	422.4	140.80	0.00	$ 15.07	$ 202.50	$ 35.00	13.4	11.1
20	Cafeteria	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	1600	563	11	S 32 C F 1 (ELE)	F41LL	32	0.352	C-OCC	1,200	422.4	140.80	0.00	$ 15.07	$ 202.50	$ 35.00	13.4	11.1
20	Kitchen	35	S 32 C F 1 (ELE)	F41LL	32	1.1	SW	1600	1,792	35	S 32 C F 1 (ELE)	F41LL	32	1.12	C-OCC	1,200	1344	448.00	0.00	$ 47.94	$ 202.50	$ 35.00	4.2	3.5
20	Kitchen Storage Large	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	1000	192	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	1,000	192	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Office	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	154	2	S 32 C F 1 (ELE)	F41LL	32	0.064	C-OCC	1,200	76.8	76.80	0.00	$ 8.22	$ 202.50	$ 35.00	24.6	20.4
20	Kitchen Storage A	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	1,000	64	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Storage B	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1,000	32	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Storage C	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1,000	32	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Storage D	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1,000	32	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Storage E	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1,000	32	0.00	0.00	$ -	$ -	$ -		
20	Kitchen Storage F	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1,000	32	0.00	0.00	$ -	$ -	$ -		
146	Gym	14	High Bay MH 400	MH400/1	458	6.4	SW	2000	12,824	14	P 54 C F 4	FC20	20	0.28	C-OCC	2,000	560	12264.00	6.13	$ 1,808.20	$ 4,402.50	$ 1,435.00	2.4	1.6
146	Gym	14	High Bay MH 400	MH400/1	458	6.4	SW	2000	12,824	14	P 54 C F 4	FC20	20	0.28	C-OCC	2,000	560	12264.00	6.13	$ 1,808.20	$ 4,402.50	$ 1,435.00	2.4	1.6
20	Gym Office	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307	4	S 32 C F 1 (ELE)	F41LL	32	0.128	C-OCC	1,200	153.6	153.60	0.00	$ 16.44	$ 202.50	$ 35.00	12.3	10.2
20	Gym Area Mechanical 1	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	128	4	S 32 C F 1 (ELE)	F41LL	32	0.128	SW	1,000	128	0.00	0.00	$ -	$ -	$ -		
20	Gym Area Mechanical 2	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	64	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	1,000	64	0.00	0.00	$ -	$ -	$ -		
20	Boy's Locker Room	19	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2800	1,702	19	S 32 C F 1 (ELE)	F41LL	32	0.608	C-OCC	2,000	1216	486.40	0.00	$ 52.04	$ 202.50	$ 35.00	3.9	3.2
20	Boy's Locker Room	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2800	269	3	S 32 C F 1 (ELE)	F41LL	32	0.096	C-OCC	2,000	192	76.80	0.00	$ 8.22	$ 202.50	$ 35.00	24.6	20.4
15	Boy's Locker Room	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2800	504	3	S 32 C F 2 (ELE)	F42LL	60	0.18	C-OCC	2,000	360	144.00	0.00	$ 15.41	$ 202.50	$ 35.00	13.1	10.9
15	Boy's Locker Room	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2800	168	1	S 32 C F 2 (ELE)	F42LL	60	0.06	C-OCC	2,000	120	48.00	0.00	$ 5.14	$ 202.50	$ 35.00	39.4	32.6
5	Boy's Locker Room	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	SW	2800	168	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.06	C-OCC	2,000	120	48.00	0.00	$ 5.14	$ 202.50	$ 35.00	39.4	32.6
108	Boy's Locker Room	2	I 65	I65/1	65	0.1	SW	2800	364	2	CF 26	CFQ26/1-L	27	0.054	C-OCC	2,000	108	256.00	0.08	$ 33.54	$ 243.00	$ 35.00	7.2	6.2
20	Girl's Locker Room	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2800	717	8	S 32 C F 1 (ELE)	F41LL	32	0.256	C-OCC	2,000	512	204.80	0.00	$ 21.91	$ 202.50	$ 35.00	9.2	7.6
20	Girl's Locker Room	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2800	717	8	S 32 C F 1 (ELE)	F41LL	32	0.256	C-OCC	2,000	512	204.80	0.00	$ 21.91	$ 202.50	$ 35.00	9.2	7.6
20	Girl's Locker Room	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2800	358	4	S 32 C F 1 (ELE)	F41LL	32	0.128	C-OCC	2,000	256	102.40	0.00	$ 10.96	$ 202.50	$ 35.00	18.5	15.3
20	Girl's Locker Room	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2800	179	2	S 32 C F 1 (ELE)	F41LL	32	0.064	C-OCC	2,000	128	51.20	0.00	$ 5.48	$ 202.50	$ 35.00	37.0	30.6
15	Girl's Locker Room	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2800	168	1	S 32 C F 2 (ELE)	F42LL	60	0.06	C-OCC	2,000	120	48.00	0.00	$ 5.14	$ 202.50	$ 35.00	39.4	32.6
15	Girl's Locker Room	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2800	168	1	S 32 C F 2 (ELE)	F42LL	60	0.06	C-OCC	2,000	120	48.00	0.00	$ 5.14	$ 202.50	$ 35.00	39.4	32.6
11	Girl's Locker Room	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2800	403	2	C 28 P F 2	F42SSILL	48	0.096	C-OCC	2,000	192	211.20	0.05	$ 26.48	$ 415.00	$ 55.00	15.7	13.6
191	Girl's Locker Room	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.1	SW	2800	344	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.123	C-OCC	2,000	246	98.40	0.00	$ 10.53	$ 202.50	$ 35.00	19.2	15.9
191	Girl's Locker Room	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.1	SW	2800	344	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.123	C-OCC	2,000	246	98.40	0.00	$ 10.53	$ 202.50	$ 35.00	19.2	15.9
20	Gym Front Storage Room	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	1000	256	8	S 32 C F 1 (ELE)	F41LL	32	0.256	SW	1,000	256	0.00	0.00	$ -	$ -	$ -		
20	Gym Back Storage Room	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	1000	192	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	1,000	192	0.00	0.00	$ -	$ -	$ -		
15	31	9	S 32 C F 2 (ELE)	F42LL	60	0.5	SW	2400	1,296	9	S 32 C F 2 (ELE)	F42LL	60	0.54	C-OCC	1,680	907.2	388.80	0.00	$ 41.60	$ 202.50	$ 35.00	4.9	4.0
15	31	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2400	1,440	10	S 32 C F 2 (ELE)	F42LL	60	0.6	C-OCC	1,680	1008	432.00	0.00	$ 46.22	$ 202.50	$ 35.00	4.4	3.6
15	31	9	S 32 C F 2 (ELE)	F42LL	60	0.5	SW	2400	1,296	9	S 32 C F 2 (ELE)	F42LL	60	0.54	C-OCC	1,680	907.2	388.80	0.00	$ 41.60	$ 202.50	$ 35.00	4.9	4.0

Energy Audit of Eisenhower Middle School

CHA Project No.24454

ECM-3 Lighting Replacements with Occupancy Sensors

Cost of Electricity: **$0.107 $/kWh**

$6.74 $/kW

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
15	31 Storage	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	1,000	120	0.00	0.00	$ -	$ -	$ -		
15	31/33 Shared Room	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	1,000	120	0.00	0.00	$ -	$ -	$ -		
15	31A	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2400	1,440	10	S 32 C F 2 (ELE)	F42LL	60	0.6	C-OCC	1,680	1008	432.00	0.00	$ 46.22	$ 202.50	$ 35.00	4.4	3.6
1	31A	2	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.1	SW	2400	149	2	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.062	C-OCC	1,680	104.16	44.64	0.00	$ 4.78	$ 202.50	$ 35.00	42.4	35.1
20	32	18	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2400	1,382	18	S 32 C F 1 (ELE)	F41LL	32	0.576	C-OCC	1,680	967.68	414.72	0.00	$ 44.38	$ 202.50	$ 35.00	4.6	3.8
15	32	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	32	9	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	691	9	S 32 C F 1 (ELE)	F41LL	32	0.288	C-OCC	1,680	483.84	207.36	0.00	$ 22.19	$ 202.50	$ 35.00	9.1	7.5
15	32	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
254	33	12	T 32 R F 4 (ELE)	F44LL	118	1.4	SW	2400	3,398	12	T 32 R F 4 (ELE)	F44LL	118	1.416	C-OCC	1,680	2378.88	1019.52	0.00	$ 109.09	$ 202.50	$ 35.00	1.9	1.5
245	33	3	T 32 R F 3 (ELE)	F43LE	110	0.3	SW	2400	792	3	T 32 R F 3 (ELE)	F43LE	110	0.33	C-OCC	1,680	554.4	237.60	0.00	$ 25.42	$ 202.50	$ 35.00	8.0	6.6
213	34	11	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.0	SW	2400	2,376	11	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.99	C-OCC	1,680	1663.2	712.80	0.00	$ 76.27	$ 202.50	$ 35.00	2.7	2.2
20	35	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	C-OCC	1,680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	35	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	35	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	C-OCC	1,680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	35	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
213	36	8	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.7	SW	2400	1,728	8	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.72	C-OCC	1,680	1209.6	518.40	0.00	$ 55.47	$ 202.50	$ 35.00	3.7	3.0
213	37	12	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.1	SW	2400	2,592	12	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.08	C-OCC	1,680	1814.4	777.60	0.00	$ 83.20	$ 202.50	$ 35.00	2.4	2.0
20	37 Closet	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1,000	32	0.00	0.00	$ -	$ -	$ -		
20	38	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	C-OCC	1,680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
15	38	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	38	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	S 32 C F 1 (ELE)	F41LL	32	0.192	C-OCC	1,680	322.56	138.24	0.00	$ 14.79	$ 202.50	$ 35.00	13.7	11.3
15	38	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	39	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768	10	S 32 C F 1 (ELE)	F41LL	32	0.32	C-OCC	1,680	537.6	230.40	0.00	$ 24.65	$ 202.50	$ 35.00	8.2	6.8
15	39	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	S 32 C F 2 (ELE)	F42LL	60	0.06	C-OCC	1,680	100.8	43.20	0.00	$ 4.62	$ 202.50	$ 35.00	43.8	36.2
20	39	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	39	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	S 32 C F 2 (ELE)	F42LL	60	0.06	C-OCC	1,680	100.8	43.20	0.00	$ 4.62	$ 202.50	$ 35.00	43.8	36.2
20	39	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768	10	S 32 C F 1 (ELE)	F41LL	32	0.32	C-OCC	1,680	537.6	230.40	0.00	$ 24.65	$ 202.50	$ 35.00	8.2	6.8
15	39	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	S 32 C F 2 (ELE)	F42LL	60	0.06	C-OCC	1,680	100.8	43.20	0.00	$ 4.62	$ 202.50	$ 35.00	43.8	36.2
20	39	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	39	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	S 32 C F 2 (ELE)	F42LL	60	0.06	C-OCC	1,680	100.8	43.20	0.00	$ 4.62	$ 202.50	$ 35.00	43.8	36.2
20	40	16	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,229	16	S 32 C F 1 (ELE)	F41LL	32	0.512	C-OCC	1,680	860.16	368.64	0.00	$ 39.44	$ 202.50	$ 35.00	5.1	4.2
15	40	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
15	40	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	40 Closet 1	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1,000	32	0.00	0.00	$ -	$ -	$ -		
20	40 Closet 2	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1,000	32	0.00	0.00	$ -	$ -	$ -		
79	Auditorium	56	SP I 100	I100/1	100	5.6	SW	1000	5,600	56	CF 26	CFQ26/1-L	27	1.512	SW	750	1134	4466.00	4.09	$ 808.50	$ 1,134.00	$ -	1.4	1.4
133	Auditorium	1	CF 26	CFQ26/1-L	27	0.0	SW	1000	27	1	CF 26	CFQ26/1-L	27	0.027	SW	750	20.25	6.75	0.00	$ 0.72	$ -	$ -	0.0	0.0
8	Stage	2	MH 175	MH175/1	215	0.4	SW	1000	430	2	MH 175	MH175/1	215	0.43	SW	1,000	430	0.00	0.00	$ -	$ -	$ -		
79	Stage	2	SP I 100	I100/1	100	0.2	SW	1000	200	2	CF 26	CFQ26/1-L	27	0.054	SW	1,000	54	146.00	0.15	$ 27.43	$ 40.50	$ -	1.5	1.5
108	Stage Closet	1	I 65	I65/1	65	0.1	SW	1000	65	1	CF 26	CFQ26/1-L	27	0.027	SW	1,000	27	38.00	0.04	$ 7.14	$ 20.25	$ -	2.8	2.8
15	H Hall Boy's Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2,000	120	0.00	0.00	$ -	$ -	$ -		
15	H Hall Girl's Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2,000	120	0.00	0.00	$ -	$ -	$ -		
108	H Hall Closet	1	I 65	I65/1	65	0.1	SW	1000	65	1	CF 26	CFQ26/1-L	27	0.027	SW	1,000	27	38.00	0.04	$ 7.14	$ 20.25	$ -	2.8	2.8
245	Team Room T1	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320	5	T 32 R F 3 (ELE)	F43LE	110	0.55	C-OCC	1,680	924	396.00	0.00	$ 42.37	$ 202.50	$ 35.00	4.8	4.0
245	Team Room T1	6	T 32 R F 3 (ELE)	F43LE	110	0.7	SW	2400	1,584	6	T 32 R F 3 (ELE)	F43LE	110	0.66	C-OCC	1,680	1108.8	475.20	0.00	$ 50.85	$ 202.50	$ 35.00	4.0	3.3
245	Team Room T1	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320	5	T 32 R F 3 (ELE)	F43LE	110	0.55	C-OCC	1,680	924	396.00	0.00	$ 42.37	$ 202.50	$ 35.00	4.8	4.0
245	Team Room T2	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320	5	T 32 R F 3 (ELE)	F43LE	110	0.55	C-OCC	1,680	924	396.00	0.00	$ 42.37	$ 202.50	$ 35.00	4.8	4.0
245	Team Room T2	6	T 32 R F 3 (ELE)	F43LE	110	0.7	SW	2400	1,584	6	T 32 R F 3 (ELE)	F43LE	110	0.66	C-OCC	1,680	1108.8	475.20	0.00	$ 50.85	$ 202.50	$ 35.00	4.0	3.3
245	Team Room T2	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320	5	T 32 R F 3 (ELE)	F43LE	110	0.55	C-OCC	1,680	924	396.00	0.00	$ 42.37	$ 202.50	$ 35.00	4.8	4.0
245	Team Room T3	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320	5	T 32 R F 3 (ELE)	F43LE	110	0.55	C-OCC	1,680	924	396.00	0.00	$ 42.37	$ 202.50	$ 35.00	4.8	4.0
245	Team Room T3	6	T 32 R F 3 (ELE)	F43LE	110	0.7	SW	2400	1,584	6	T 32 R F 3 (ELE)	F43LE	110	0.66	C-OCC	1,680	1108.8	475.20	0.00	$ 50.85	$ 202.50	$ 35.00	4.0	3.3
245	Team Room T3	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320	5	T 32 R F 3 (ELE)	F43LE	110	0.55	C-OCC	1,680	924	396.00	0.00	$ 42.37	$ 202.50	$ 35.00	4.8	4.0
245	Team Room T4	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320	5	T 32 R F 3 (ELE)	F43LE	110	0.55	C-OCC	1,680	924	396.00	0.00	$ 42.37	$ 202.50	$ 35.00	4.8	4.0
245	Team Room T4	6	T 32 R F 3 (ELE)	F43LE	110	0.7	SW	2400	1,584	6	T 32 R F 3 (ELE)	F43LE	110	0.66	C-OCC	1,680	1108.8	475.20	0.00	$ 50.85	$ 202.50	$ 35.00	4.0	3.3
245	Team Room T4	5	T 32 R F 3 (ELE)	F43LE	110	0.6	SW	2400	1,320	5	T 32 R F 3 (ELE)	F43LE	110	0.55	C-OCC	1,680	924	396.00	0.00	$ 42.37	$ 202.50	$ 35.00	4.8	4.0
1	Team Room	14	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.4	SW	2400	1,042	14	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.434	C-OCC	1,680	729.12	312.48	0.00	$ 33.44	$ 202.50	$ 35.00	6.1	5.0
245	N. Team Room Aux Room	3	T 32 R F 3 (ELE)	F43LE	110	0.3	SW	2400	792	3	T 32 R F 3 (ELE)	F43LE	110	0.33	C-OCC	1,680	554.4	237.60	0.00	$ 25.42	$ 202.50	$ 35.00	8.0	6.6
245	S. Team Room Aux Room	3	T 32 R F 3 (ELE)	F43LE	110	0.3	SW	2400	792	3	T 32 R F 3 (ELE)	F43LE	110	0.33	C-OCC	1,680	554.4	237.60	0.00	$ 25.42	$ 202.50	$ 35.00	8.0	6.6
254	41	14	T 32 R F 4 (ELE)	F44LL	118	1.7	SW	2400	3,965	14	T 32 R F 4 (ELE)	F44LL	118	1.652	C-OCC	1,680	2775.36	1189.44	0.00	$ 127.27	$ 202.50	$ 35.00	1.6	1.3
254	41/42 Office	2	T 32 R F 4 (ELE)	F44LL	118	0.2	SW	2400	566	2	T 32 R F 4 (ELE)	F44LL	118	0.236	C-OCC	1,200	283.2	283.20	0.00	$ 30.30	$ 202.50	$ 35.00	6.7	5.5
254	42	15	T 32 R F 4 (ELE)	F44LL	118	1.8	SW	2400	4,248	15	T 32 R F 4 (ELE)	F44LL	118	1.77	C-OCC	1,680	2973.6	1274.40	0.00	$ 136.36	$ 202.50	$ 35.00	1.5	1.2
245	42 Closet 1	1	T 32 R F 3 (ELE)	F43LE	110	0.1	SW	1000	110	1	T 32 R F 3 (ELE)	F43LE	110	0.11	SW	1,000	110	0.00	0.00	$ -	$ -	$ -		
245	42 Closet 2	1	T 32 R F 3 (ELE)	F43LE	110	0.1	SW	1000	110	1	T 32 R F 3 (ELE)	F43LE	110	0.11	SW	1,000	110	0.00	0.00	$ -	$ -	$ -		
254	43	28	T 32 R F 4 (ELE)	F44LL	118	3.3	SW	2400	7,930	28	T 32 R F 4 (ELE)	F44LL	118	3.304	C-OCC	1,680	5550.72	2378.88	0.00	$ 254.54	$ 202.50	$ 35.00	0.8	0.7
15	M Hall Closet 1	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	180	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	1,000	180	0.00	0.00	$ -	$ -	$ -		
15	M Hall Closet 2	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	180	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	1,000	180	0.00	0.00	$ -	$ -	$ -		
15	M Hall Closet 3	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	180	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	1,000	180	0.00	0.00	$ -	$ -	$ -		
15	M Hall Closet 4	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	180	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	1,000	180	0.00	0.00	$ -	$ -	$ -		
15	Main Entrance Lobby	12	S 32 C F 2 (ELE)	F42LL	60	0.7	SW	2280	1,642	12	S 32 C F 2 (ELE)	F42LL	60	0.72	SW	2,280	1641.6	0.00	0.00	$ -	$ -	$ -		
20	A Hallway	19	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2280	1,386	19	S 32 C F 1 (ELE)	F41LL	32	0.608	SW	2,280	1386.24	0.00	0.00	$ -	$ -	$ -		
15	A Hallway	13	S 32 C F 2 (ELE)	F42LL	60	0.8	SW	2280	1,778	13	S 32 C F 2 (ELE)	F42LL	60	0.78	SW	2,280	1778.4	0.00	0.00	$ -	$ -	$ -		
20	B Hallway	35	S 32 C F 1 (ELE)	F41LL	32	1.1	SW	2280	2,554	35	S 32 C F 1 (ELE)	F41LL	32	1.12	SW	2,280	2553.6	0.00	0.00	$ -	$ -	$ -		
20	C Hallway	35	S 32 C F 1 (ELE)	F41LL	32	1.1	SW	2280	2,554	35	S 32 C F 1 (ELE)	F41LL	32	1.12	SW	2,280	2553.6	0.00	0.00	$ -	$ -	$ -		
20	D Hallway	35	S 32 C F 1 (ELE)	F41LL	32	1.1	SW	2280	2,554	35	S 32 C F 1 (ELE)	F41LL	32	1.12	SW	2,280	2553.6	0.00	0.00	$ -	$ -	$ -		
4	E Hallway	2	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	SW	2280	328	2	2T 17 R F 2 (ELE)	F22ILL	33	0.066	SW	2,280	150.48	177.84	0.08	$ 25.34	$ 202.50	$ 20.00	8.0	7.2
1	E Hallway	22	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.7	SW	2280	1,555	22	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.682	SW	2,280	1554.96	0.00	0.00	$ -	$ -	$ -		
4	E Hallway	6	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.4	SW	2280	985	6	2T 17 R F 2 (ELE)	F22ILL	33	0.198	SW	2,280	451.44	533.52	0.23	$ 76.01	$ 607.50	$ 60.00	8.0	7.2
20	F Hallway	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	365	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2,280	364.8	0.00	0.00	$ -	$ -	$ -		
20	G Hallway	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2280	438	6	S 32 C F 1 (ELE)	F41LL	32	0.192	SW	2,280	437.76	0.00	0.00	$ -	$ -	$ -		
15	H Hallway	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2280	1,368	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2,280	1368	0.00	0.00	$ -	$ -	$ -		
15	M hallway	8	S 32 C F 2 (ELE)	F42LL	60	0.5	SW	2280	1,094	8	S 32 C F 2 (ELE)	F42LL	60	0.48	SW	2,280	1094.4	0.00	0.00	$ -	$ -	$ -		
15	M hallway	5	S 32 C F 2 (ELE)	F42LL	60	0.3	SW	2280	684	5	S 32 C F 2 (ELE)	F42LL	60	0.3	SW	2,280	684	0.00	0.00	$ -	$ -	$ -		
5	Team Room Lobby	9	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.5	SW	2280	1,231	9	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.54	SW	2,280	1231.2	0.00	0.00	$ -	$ -	$ -		
68	Exterior	22	175 MH WALL	MH175/1	215	4.7	SW	4368	20,661	22	175 MH WALL	MH175/1	215	4.73	SW	4,368	20660.64	0.00	0.00	$ -	$ -	$ -		
37	Exterior	2	SP 26 R CF 2	CFQ26/2-L	50	0.1	SW	4368	437	2	SP 26 R CF 2	CFQ26/2-L	50	0.1	SW	4,368	436.8	0.00	0.00	$ -	$ -	$ -		
79	Exterior	3	SP I 100	I100/1	100	0.3	SW	4368	1,310	3	CF 26	CFQ26/1-L	27	0.081	SW	4,368	353.808	956.59	0.22	$ 120.07	$ 60.75	$ -	0.5	0.5
	Total	**1,732**				**103.5**			**236,253**	**1,732**				**86.2**			**157,758**		**17.4**	**$ 9,802.50**	**$ 51,086.75**	**$ 9,850.00**		
																	Demand Savings		**17.4**	**$ 1,403.51**			
																	kWh Savings			**78495**	**$ 8,398.98**			
																	Total Savings				**$ 9,802.50**		**5.2**	**4.2**

APPENDIX D

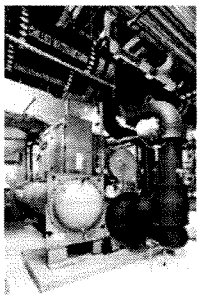
New Jersey Pay For Performance Incentive Program

Pay for Performance - Existing Buildings

Download program applications and incentive forms.

The Greater the Savings, the Greater Your Incentives

Take a comprehensive, whole-building approach to saving energy in your existing facilities and earn incentives that are directly linked to your savings. Pay for Performance relies on a network of program partners who provide technical services under direct contract to you. Acting as your energy expert, your partner will develop an energy reduction plan for each project with a whole-building technical component of a traditional energy audit, a financial plan for funding the energy efficient measures and a construction schedule for installation.



Eligibility

Existing commercial, industrial and institutional buildings with a peak demand over 100 kW for any of the preceding twelve months are eligible to participate including hotels and casinos, large office buildings, multi-family buildings, supermarkets, manufacturing facilities, schools, shopping malls and restaurants. Buildings that fall into the following five customer classes are not required to meet the 100 kW demand in order to participate in the program: hospitals, public colleges and universities, 501(c)(3) non-profits, affordable multifamily housing, and local governmental entities. Your energy reduction plan must define a comprehensive package of measures capable of reducing the existing energy consumption of your building by 15% or more.

Exceptions to the 15% threshold requirement may be made for certain industrial, manufacturing, water treatment and datacenter building types whose annual energy consumption is heavily weighted on process loads. Details are available in the high energy intensity section of the FAQ page.

ENERGY STAR Portfolio Manager

Pay for Performance takes advantage of the ENERGY STAR Program with Portfolio Manager, EPA's interactive tool that allows facility managers to track and evaluate energy and water consumption across all of their buildings. The tool provides the opportunity to load in the characteristics and energy usage of your buildings and determine an energy performance benchmark score. You can then assess energy management goals over time, identify strategic opportunities for savings, and receive EPA recognition for superior energy performance.

This rating system assesses building performance by tracking and scoring energy use in your facilities and comparing it to similar buildings. That can be a big help in locating opportunities for cost-justified energy efficiency upgrades. And, based on our findings, you may be invited to participate in the Building Performance with ENERGY STAR initiative and receive special recognition as an industry leader in energy efficiency.

Incentives

Pay for Performance incentives are awarded upon the satisfactory completion of three program milestones:

Incentive #1 - Submittal of complete energy reduction plan prepared by an approved program partner - Contingent on moving forward, incentives will be between $5,000 and $50,000 based on approximately $.10 per square foot, not to exceed 50% of the facility's annual energy expense.

Incentive #2 - Installation of recommended measures - Incentives are based on the projected level of electricity and natural gas savings resulting from the installation of comprehensive energy-efficiency measures.

Incentive #3 - Completion of Post-Construction Benchmarking Report - A completed report verifying energy reductions based on one year of post-implementation results. Incentives for electricity and natural gas savings will be paid based on actual savings, provided that the minimum performance threshold of 15% savings has been achieved.

CONTACT US

A detailed Incentive Structure document is available on the applications and forms page.

Energy Efficiency Revolving Loan Fund (EE RLF)

New Jersey-based commercial, institutional or industrial entities (including 501(c)(3) organizations) that have received an approved energy reduction plan under Pay for Performance may be eligible for supplemental financing through the EE RLF. The financing, in the form of low-interest loans, can be used to support up to 80% of total eligible project costs, not to exceed $2.5 million or 100% of total eligible project costs from all public state funding sources. Visit the NJ EDA website for details.

Steps to Participation

Click here for a step-by-step description of the program.

New Jersey Pay For Performance Incentive Program

Note: The following calculation is based on the New Jersey Pay For Performance Incentive Program per April, 2012.
Building must have a minimum average electric demand of 100 kW. This minimum is waived for buildings owned by local governements or non-profit organizations.
Values used in this calculation are for measures with a positive return on investment (ROI) only.

Total Building Area (Square Feet)	105,840
Is this audit funded by NJ BPU (Y/N)	Yes

Board of Public Utilites (BPU)

Incentive #1		
Audit is funded by NJ BPU	$0.10	$/sqft

	Annual Utilities	
	kWh	Therms
Existing Cost (from utility)	$179,021	$23,532
Existing Usage (from utility)	1,444,174	19,171
Proposed Savings	127,216	-1,101
Existing Total MMBtus	6,846	
Proposed Savings MMBtus	324	
% Energy Reduction	**4.7%**	
Proposed Annual Savings	$14,400	

	Min (Savings = 15%)		Increase (Savings > 15%)		Max Incentive		Achieved Incentive	
	$/kWh	$/therm	$/kWh	$/therm	$/kWh	$/therm	$/kWh	$/therm
Incentive #2	$0.09	$0.90	$0.005	$0.05	$0.11	$1.25	$0.00	$0.00
Incentive #3	$0.09	$0.90	$0.005	$0.05	$0.11	$1.25	$0.00	$0.00

	Incentives $		
	Elec	Gas	Total
Incentive #1	$0	$0	$10,584
Incentive #2	$0	$0	$0
Incentive #3	$0	$0	$0
Total All Incentives	**$0**	**$0**	**$10,584**

Total Project Cost	$71,331

		Allowable Incentive
% Incentives #1 of Utility Cost*	5.2%	$10,584
% Incentives #2 of Project Cost**	0.0%	$0
% Incentives #3 of Project Cost**	0.0%	$0
Total Eligible Incentives***	**$10,584**	
Project Cost w/ Incentives	$60,747	

Project Payback (years)	
w/o Incentives	w/ Incentives
5.0	4.2

* Maximum allowable incentive is 50% of annual utility cost if not funded by NJ BPU, and %25 if it is.

** Maximum allowable amount of Incentive #2 is 25% of total project cost.
Maximum allowable amount of Incentive #3 is 25% of total project cost.

*** Maximum allowable amount of Incentive #1 is $50,000 if not funded by NJ BPU, and $25,000 if it is.
Maximum allowable amount of Incentive #2 & #3 is $1 million per gas account and $1 million per electric account; maximum 2 million per project

New Jersey's Clean Energy PROGRAM
Your Power to Save
njcleanenergy.com

New Jersey SmartStart BUILDINGS®

BPU

2012 PAY FOR PERFORMANCE PROGRAM
Existing Buildings Incentive Structure

Incentive #1: Energy Reduction Plan

Incentive Amount: ..... $0.10 per sq ft
Minimum Incentive: $5,000
Maximum Incentive:: ..... $50,000 or 50% of facility annual energy cost (whichever is less)

This incentive is designed to offset the cost of services associated with the development of the Energy Reduction Plan (ERP) and is paid upon ERP approval. Incentive is contingent on implementation of recommended measures outlined in the ERP.

Incentive #2: Installation of Recommended Measures

Minimum Performance Target: 15%

Electric Incentives

Base Incentive based on 15% savings: ..... $0.09 per projected kWh saved
For each % over 15% add: ..... $0.005 per projected kWh saved
Maximum Incentive: ..... $0.11 per projected kWh saved

Gas Incentives

Base Incentive based on 15% savings: ..... $0.90 per projected Therm saved
For each % over 15% add: ..... $0.05 per projected Therm saved
Maximum Incentive: ..... $1.25 per projected Therm saved

Incentive Cap: ..... 25% of total project cost

This incentive is based on projected energy savings outlined in the ERP. Incentive is paid upon successful installation of recommended measures.

Incentive #3: Post-Construction Benchmarking Report

Minimum Performance Target: 15%

Electric Incentives

Base Incentive based on 15% savings: ..... $0.09 per actual kWh saved
For each % over 15% add: ..... $0.005 per actual kWh saved
Maximum Incentive: ..... $0.11 per actual kWh saved

Gas Incentives

Base Incentive based on 15% savings: ..... $0.90 per actual Therm saved
For each % over 15% add: ..... $0.05 per actual Therm saved
Maximum Incentive: ..... $1.25 per actual Therm saved

Incentive Cap: ..... 25% of total project cost

This incentive will be released upon submittal of a Post-Construction Benchmarking Report that verifies that the level of savings actually achieved by the installed measures meets or exceeds the minimum performance threshold. To validate the savings and achievement of the Energy Target, the EPA Portfolio Manager shall be used. Savings should be rounded to the nearest percent. Total value of Incentive #2 and Incentive #3 may not exceed 50% of the total project cost. Incentives will be limited to $1 million per gas and electric account per building; maximum of $2 million per project. See Participation Agreement for details.

APPENDIX E

ESIP Information

COMMERCIAL, INDUSTRIAL AND LOCAL GOVERNMENT

- PROGRAMS
  - NJ SMARTSTART BUILDINGS
  - PAY FOR PERFORMANCE
  - COMBINED HEAT & POWER AND FUEL CELLS
  - LOCAL GOVERNMENT ENERGY AUDIT
  - LARGE ENERGY USERS PILOT
  - ENERGY SAVINGS IMPROVEMENT PLAN
  - DIRECT INSTALL
  - ENERGY BENCHMARKING
  - T-12 SCHOOLS LIGHTING INITIATIVE
  - OIL, PROPANE & MUNICIPAL ELECTRIC CUSTOMERS
  - EDA PROGRAMS
  - TEACH
  - ARRA
- TECHNOLOGIES
- TOOLS AND RESOURCES
- PROGRAM UPDATES
- CONTACT US

Home » Commercial & Industrial » Programs

Energy Savings Improvement Plan

A new State law allows government agencies to make energy related improvements to their facilities and pay for the costs using the value of energy savings that result from the improvements. Under the recently enacted Chapter 4 of the Laws of 2009 (the law), the "Energy Savings Improvement Program" (ESIP), provides all government agencies in New Jersey with a flexible tool to improve and reduce energy usage with minimal expenditure of new financial resources.

This Local Finance Notice outlines how local governments can develop and implement an ESIP for their facilities. Below are two sample RFPs:

- Local Government
- School Districts (K-12)

The Board also adopted protocols to measure energy savings.

The ESIP approach may not be appropriate for all energy conservation and energy efficiency improvements. Local units should carefully consider all alternatives to develop an approach that best meets their needs. Local units considering an ESIP should carefully review the Local Finance Notice, the law, and consult with qualified professionals to determine how they should approach the task.

FIRST STEP – ENERGY AUDIT

For local governments interested in pursuing an ESIP, the first step is to perform an energy audit. As explained in the Local Finance Notice, this may be done internally if an agency has qualified staff to conduct the audit. If not, the audit must be implemented by an independent contractor and not by the energy savings company producing the Energy Reduction Plan.

Pursuing a Local Government Energy Audit through New Jersey's Clean Energy Program is a valuable first step to the ESIP approach - and it's free. **Incentives provide 100% of the cost of the audit.**

ENERGY REDUCTION PLANS

If you have an ESIP plan you would like to submit to the Board of Public Utilities, please email it to ESIP@bpu.state.nj.us. Please limit the file size to 3MB (or break it into smaller files).

- Frankford Township School District
- Northern Hunterdon-Voorhees Regional High School
- Manalapan Township ***(180 MB** - Right Click, Save As)*

Program Updates

- Board Order - Standby Charges for Distributed Generation Customers
- T-12 Schools Lighting Replacement Initiative - Funding Allocation Reached

Other updates posted.

APPENDIX F

Photovoltaic (PV) Rooftop Solar Power Generation

Roxbury Township Board of Education
Eisenhower Middle School

Cost of Electricity	$0.124	/kWh
Electricity Usage	1,444,174	kWh/yr
System Unit Cost	$4,000	/kW

Photovoltaic (PV) Solar Power Generation - Screening Assessment

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Federal Tax Credit	New Jersey Renewable ** SREC	Payback (without incentive)	Payback (with incentive)
$	kW	kWh	therms	$	$	$	$	$	Years	Years
$720,000	**180.0**	**224,814**	**0**	**$27,868**	**0**	**$27,868**	**$0**	**$14,613**	**25.8**	**16.9**

** Estimated Solar Renewable Energy Certificate Program (SREC) SREC for 15 Years= $65 /1000kwh

Area Output*
3636.186 m2
39,140 ft2

Perimeter Output*
369.302 m
1,212 ft

Available Roof Space for PV:
(Area Output - 10 ft x Perimeter) x 85%
22,970 ft2

Approximate System Size: Is the roof flat? (Yes/No) Yes

8	watt/ft2	
183,759	DC watts	
180	kW	Enter into PV Watts

PV Watts Inputs***

Array Tilt Angle	20	Enter into PV Watts (always 20 if flat, if pitched - enter estimated roof angle)
Array Azimuth	180	Enter into PV Watts (default)
Zip Code	07876	Enter into PV Watts
DC/AC Derate Factor	0.83	Enter info PV Watts

PV Watts Output
224,814 annual kWh calculated in PV Watts program

% Offset Calc

Usage	1,444,174	(from utilities)
PV Generation	224,814	(generated using PV Watts)
% offset	16%	

* http://www.freemaptools.com/area-calculator.htm
** http://www.flettexchange.com
*** http://gisatnrel.nrel.gov/PVWatts_Viewer/index.html

PVWatts * * * AC Energy & Cost Savings

Cautions for Interpreting the Results

(Type comments here to appear on printout; maximum 1 row of 80 characters.)

Station Identification	
City:	Newark
State:	New_Jersey
Latitude:	40.70° N
Longitude:	74.17° W
Elevation:	9 m
PV System Specifications	
DC Rating:	180.0 kW
DC to AC Derate Factor:	0.830
AC Rating:	149.4 kW
Array Type:	Fixed Tilt
Array Tilt:	20.0°
Array Azimuth:	180.0°
Energy Specifications	
Cost of Electricity:	12.4 ¢/kWh

Results			
Month	Solar Radiation (kWh/m ^{2}/day)	AC Energy (kWh)	Energy Value ($)
1	2.78	13148	1630.35
2	3.54	15149	1878.48
3	4.35	20056	2486.94
4	4.95	21259	2636.12
5	5.69	24682	3060.57
6	5.86	23874	2960.38
7	5.73	23836	2955.66
8	5.47	22518	2792.23
9	4.91	20173	2501.45
10	3.99	17498	2169.75
11	2.68	11745	1456.38
12	2.35	10876	1348.62
Year	4.36	224814	27876.94

Output Hourly Performance Data * Output Results as Text

About the Hourly Performance Data Saving Text from a Browser

Run PVWATTS v.1 for another US location or an International location
Run PVWATTS v.2 (US only)

Please send questions and comments regarding PVWATTS to Webmaster

Disclaimer and copyright notice

RReDC Return to RReDC home page (*http://www.nrel.gov/rredc*)

APPENDIX G

EPA Portfolio Manager

OMB No. 2060-0347

STATEMENT OF ENERGY PERFORMANCE
Eisenhower Middle School

Building ID: 3210021
For 12-month Period Ending: May 31, 2012[1]
Date SEP becomes ineligible: N/A

Date SEP Generated: August 17, 2012

Facility
Eisenhower Middle School
47 Eyland Ave
Succasunna, NJ 07876

Facility Owner
N/A

Primary Contact for this Facility
N/A

Year Built: 1961
Gross Floor Area (ft²): 105,840

Energy Performance Rating[2] (1-100) 28

Site Energy Use Summary[3]

Electricity - Grid Purchase(kBtu)	4,927,518
Natural Gas (kBtu)[4]	1,917,110
Total Energy (kBtu)	6,844,628

Energy Intensity[4]

Site (kBtu/ft²/yr)	65
Source (kBtu/ft²/yr)	174

Emissions (based on site energy use)

Greenhouse Gas Emissions ($MtCO_2e$/year)	800

Electric Distribution Utility
Jersey Central Power & Light Co [FirstEnergy Corp]

National Median Comparison

National Median Site EUI	53
National Median Source EUI	144
% Difference from National Median Source EUI	22%
Building Type	K-12 School

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

Certifying Professional
N/A

Meets Industry Standards[5] **for Indoor Environmental Conditions:**

Ventilation for Acceptable Indoor Air Quality	**N/A**
Acceptable Thermal Environmental Conditions	**N/A**
Adequate Illumination	**N/A**

Notes:
1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Values represent energy intensity, annualized to a 12-month period.
5. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

ENERGY STAR® Data Checklist for Commercial Buildings

In order for a building to qualify for the ENERGY STAR, a Professional Engineer (PE) or a Registered Architect (RA) must validate the accuracy of the data underlying the building's energy performance rating. This checklist is designed to provide an at-a-glance summary of a property's physical and operating characteristics, as well as its total energy consumption, to assist the PE or RA in double-checking the information that the building owner or operator has entered into Portfolio Manager.

Please complete and sign this checklist and include it with the stamped, signed Statement of Energy Performance.
NOTE: You must check each box to indicate that each value is correct, OR include a note.

CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	☑
Building Name	Eisenhower Middle School	Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings?		☐
Type	K-12 School	Is this an accurate description of the space in question?		☐
Location	47 Eyland Ave, Succasunna, NJ 07876	Is this address accurate and complete? Correct weather normalization requires an accurate zip code.		☐
Single Structure	Single Facility	Does this SEP represent a single structure? SEPs cannot be submitted for multiple-building campuses (with the exception of a hospital, k-12 school, hotel and senior care facility) nor can they be submitted as representing only a portion of a building.		☐
School (K-12 School)				
CRITERION	**VALUE AS ENTERED IN PORTFOLIO MANAGER**	**VERIFICATION QUESTIONS**	**NOTES**	☑
Gross Floor Area	105,840 Sq. Ft.	Does this square footage include all supporting functions such as kitchens and break rooms used by staff, storage areas, administrative areas, elevators, stairwells, atria, vent shafts, etc. Also note that existing atriums should only include the base floor area that it occupies. Interstitial (plenum) space between floors should not be included in the total. Finally gross floor area is not the same as leasable space. Leasable space is a subset of gross floor area.		☐
Open Weekends?	No (Default)	Is this building normally open at all on the weekends? This includes activities beyond the work conducted by maintenance, cleaning, and security personnel. Weekend activity could include any time when the space is used for classes, performances or other school or community activities. If the building is open on the weekend as part of the standard schedule during one or more seasons, the building should select ?yes? for open weekends. The ?yes? response should apply whether the building is open for one or both of the weekend days.		☐
Number of PCs	185 (Default)	Is this the number of personal computers in the K12 School?		☐
Number of walk-in refrigeration/freezer units	1 (Default)	Is this the total number of commercial walk-in type freezers and coolers? These units are typically found in storage and receiving areas.		☐
Presence of cooking facilities	Yes (Default)	Does this school have a dedicated space in which food is prepared and served to students? If the school has space in which food for students is only kept warm and/or served to students, or has only a galley that is used by teachers and staff then the answer is "no".		☐
Percent Cooled	100 % (Default)	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		☐
Percent Heated	100 % (Default)	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		☐
Months	N/A(Optional)	Is this school in operation for at least 8 months of the year?		☐

High School?	No	Is this building a high school (teaching grades 10, 11, and/or 12)? If the building teaches to high school students at all, the user should check 'yes' to 'high school'. For example, if the school teaches to grades K-12 (elementary/middle and high school), the user should check 'yes' to 'high school'.		☐

ENERGY STAR® Data Checklist for Commercial Buildings

Energy Consumption

Power Generation Plant or Distribution Utility: Jersey Central Power & Light Co [FirstEnergy Corp]

Fuel Type: Electricity

Meter: Electricity (kWh (thousand Watt-hours))
Space(s): Entire Facility
Generation Method: Grid Purchase

Start Date	End Date	Energy Use (kWh (thousand Watt-hours))
05/01/2012	05/31/2012	95,470.00
04/01/2012	04/30/2012	102,316.00
03/01/2012	03/31/2012	109,162.00
02/01/2012	02/29/2012	130,118.00
01/01/2012	01/31/2012	154,181.00
12/01/2011	12/31/2011	127,468.00
11/01/2011	11/30/2011	119,830.00
10/01/2011	10/31/2011	116,826.00
09/01/2011	09/30/2011	111,241.00
08/01/2011	08/31/2011	117,052.00
07/01/2011	07/31/2011	139,142.00
06/01/2011	06/30/2011	121,367.00
Electricity Consumption (kWh (thousand Watt-hours))		**1,444,173.00**
Electricity Consumption (kBtu (thousand Btu))		**4,927,518.28**
Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu))		**4,927,518.28**
Is this the total Electricity (Grid Purchase) consumption at this building including all Electricity meters?		☐

Fuel Type: Natural Gas

Meter: Natural Gas (therms)
Space(s): Entire Facility

Start Date	End Date	Energy Use (therms)
05/01/2012	05/31/2012	103.00
04/01/2012	04/30/2012	914.30
03/01/2012	03/31/2012	1,885.10
02/01/2012	02/29/2012	3,741.00
01/01/2012	01/31/2012	4,366.00
12/01/2011	12/31/2011	4,096.10
11/01/2011	11/30/2011	2,796.60
10/01/2011	10/31/2011	803.80
09/01/2011	09/30/2011	50.70
08/01/2011	08/31/2011	16.40

07/01/2011	07/31/2011	21.90
06/01/2011	06/30/2011	376.20
Natural Gas Consumption (therms)		**19,171.10**
Natural Gas Consumption (kBtu (thousand Btu))		**1,917,110.00**
Total Natural Gas Consumption (kBtu (thousand Btu))		**1,917,110.00**
Is this the total Natural Gas consumption at this building including all Natural Gas meters?		☐

Additional Fuels	
Do the fuel consumption totals shown above represent the total energy use of this building? Please confirm there are no additional fuels (district energy, generator fuel oil) used in this facility.	☐

On-Site Solar and Wind Energy	
Do the fuel consumption totals shown above include all on-site solar and/or wind power located at your facility? Please confirm that no on-site solar or wind installations have been omitted from this list. All on-site systems must be reported.	☐

Certifying Professional

(When applying for the ENERGY STAR, the Certifying Professional must be the same PE or RA that signed and stamped the SEP.)

Name: _____ Date: _____

Signature: _____

Signature is required when applying for the ENERGY STAR.

FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

Facility
Eisenhower Middle School
47 Eyland Ave
Succasunna, NJ 07876

Facility Owner
N/A

Primary Contact for this Facility
N/A

General Information

Eisenhower Middle School	
Gross Floor Area Excluding Parking: (ft^2)	105,840
Year Built	1961
For 12-month Evaluation Period Ending Date:	May 31, 2012

Facility Space Use Summary

School	
Space Type	K-12 School
Gross Floor Area (ft^2)	105,840
Open Weekends? [d]	No
Number of PCs [d]	185
Number of walk-in refrigeration/freezer units [d]	1
Presence of cooking facilities [d]	Yes
Percent Cooled [d]	100
Percent Heated [d]	100
Months [o]	N/A
High School?	No
School District [o]	N/A

Energy Performance Comparison

	Evaluation Periods		Comparisons		
Performance Metrics	**Current** (Ending Date 05/31/2012)	**Baseline** (Ending Date 07/31/2011)	**Rating of 75**	**Target**	**National Median**
Energy Performance Rating	28	14	75	N/A	50
Energy Intensity					
Site ($kBtu/ft^2$)	65	83	42	N/A	53
Source ($kBtu/ft^2$)	174	208	112	N/A	144
Energy Cost					
$/year	$ 202,553.21	$ 247,858.63	$ 130,358.20	N/A	$ 166,721.93
$/$ft^2$/year	$ 1.91	$ 2.34	$ 1.23	N/A	$ 1.57
Greenhouse Gas Emissions					
$MtCO_2e$/year	800	960	515	N/A	658
$kgCO_2e/ft^2$/year	8	9	5	N/A	7

More than 50% of your building is defined as K-12 School. Please note that your rating accounts for all of the spaces listed. The National Median column presents energy performance data your building would have if your building had a median rating of 50.

Notes:
o - This attribute is optional.
d - A default value has been supplied by Portfolio Manager.

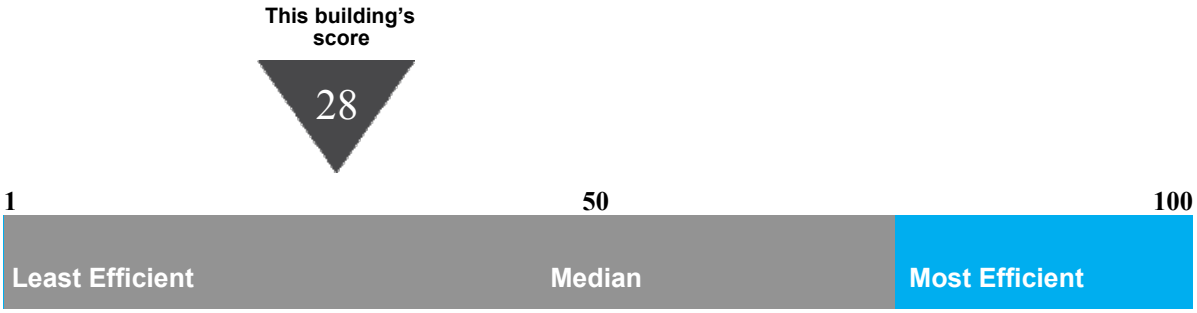
Statement of Energy Performance

2012

Eisenhower Middle School
47 Eyland Ave
Succasunna, NJ 07876

Portfolio Manager Building ID: 3210021

The energy use of this building has been measured and compared to other similar buildings using the Environmental Protection Agency's (EPA's) Energy Performance Scale of 1–100, with 1 being the least energy efficient and 100 the most energy efficient. For more information, visit energystar.gov/benchmark.



This building uses 174 kBtu per square foot per year.*

*Based on source energy intensity for the 12 month period ending May 2012

Buildings with a score of 75 or higher may qualify for EPA's ENERGY STAR.

I certify that the information contained within this statement is accurate and in accordance with U.S. Environmental Protection Agency's measurement standards, found at energystar.gov

Date of certification

EPA United States Environmental Protection Agency

Date Generated: 08/17/2012